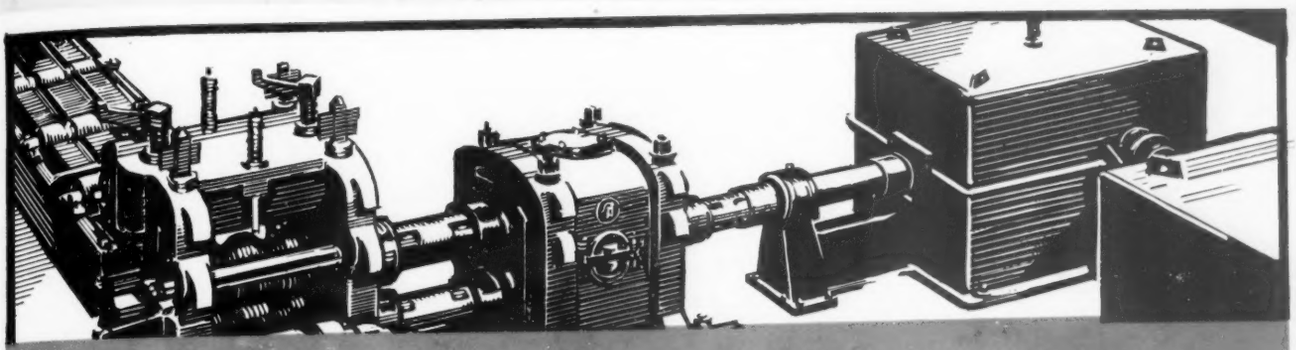
NOV 13 1930

STEEL

For forty eight years—IRON TRADE REVIEW

November 13, 1930



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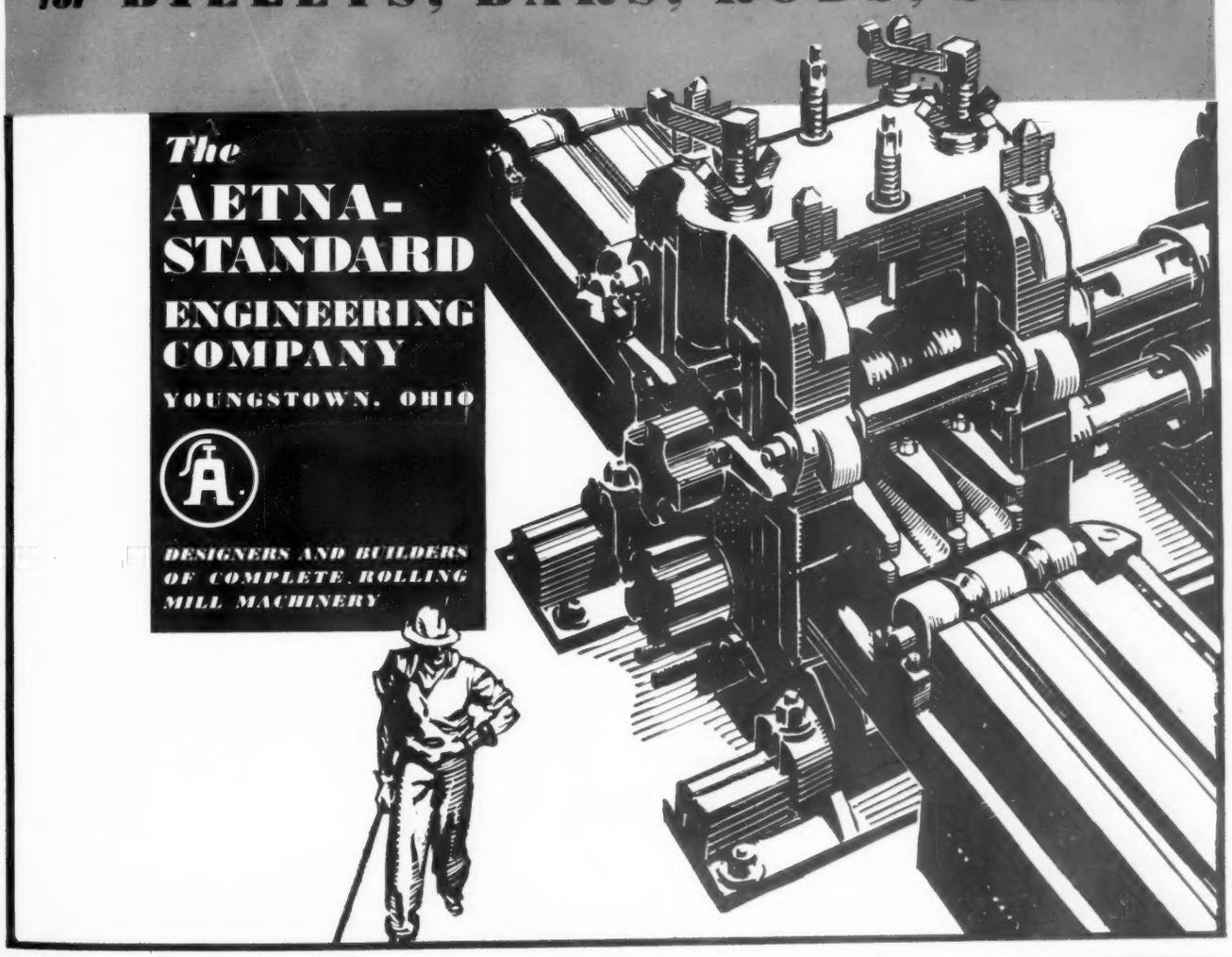

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PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

Processes Wrought Iron in Balls Weighing 3 Tons. Page 43.

THIS WEEK:

PRESENT potential steel pipemaking capacity of the United States is estimated at 8,000,000 tons annually, according to the survey revealed on page 25. In three years, electric welded capacity has grown from nothing to 2,200,000 tons and is second only to lap weld with 2,900,000 tons. Seamless is third with 1,735,000 tons. That the pipemaking division of the steel industry is keeping pace with development in the petroleum and natural gas industry is apparent. During the next three to five years, consumption of steel in pipe lines may amount to between 15 and 20 million tons.

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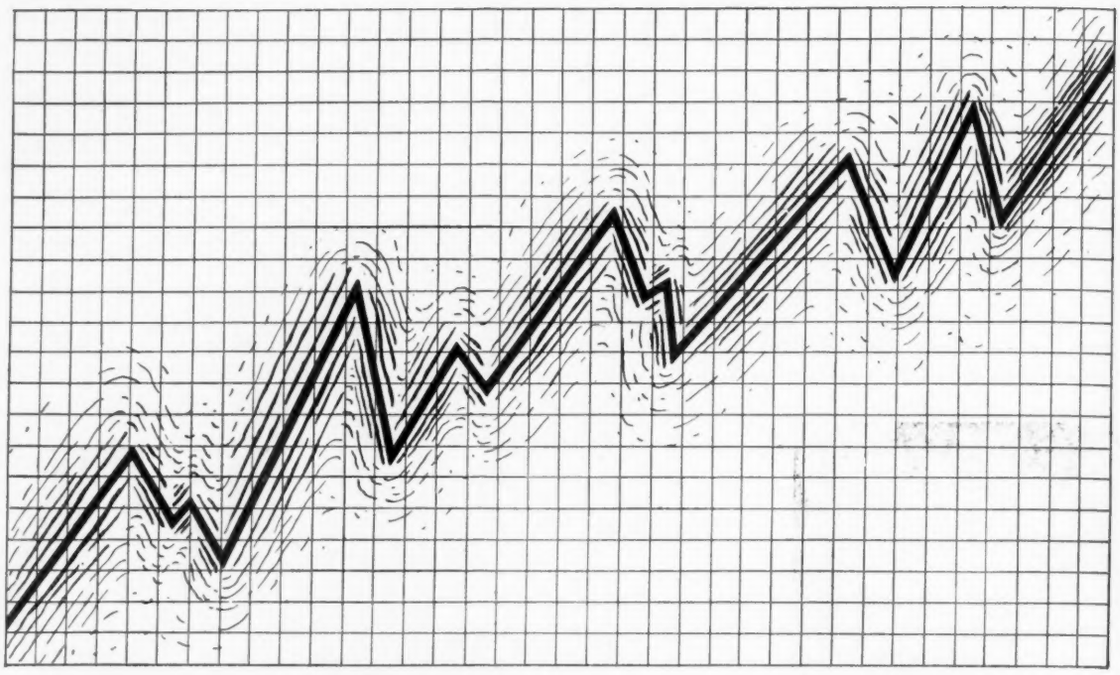

Fidgety Production Schedules Call for Immediate Steel

Up and down—up and down—rush orders and fluctuating volume that keep the purchasing agent on edge; a period of sudden spurts and tiresome lags in production, that brings out the full value of dependable sources for material.

There is little economy in shopping around if in so doing you fail to keep step with today's fast changing schedules. One order grouping requirements through a reliable source saves time, trouble and money, and production will not feel the drag of slow deliveries.

Ten Ryerson plants assure immediate shipment of everything in steel and allied products. The wide range of materials carried offers an unusual opportunity to concentrate orders. —And you can absolutely depend on quick, accurate shipment from warehouse stock.

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STEEL-SERVICE

Volume 87 Number 20

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

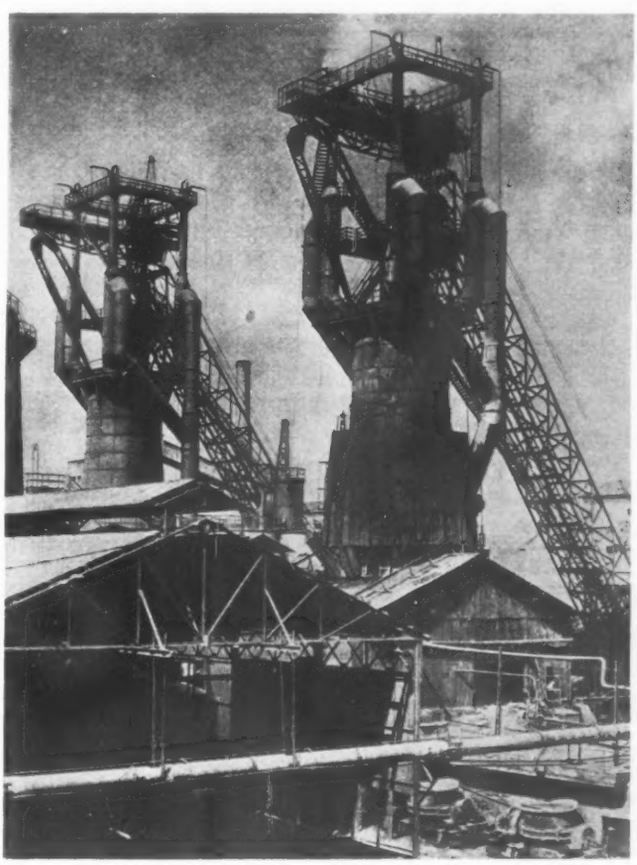
PARADOXICALLY, the assault of hostile developments upon steel in the past few days has only served to prove the industry shockproof. Consider the storm of adversity: Steel ingot production in October almost breaking through 100,000 tons daily and, like pig iron, at the lowest point since 1924; only 111 of the country's 310 blast furnaces active; STEEL'S market price composite declining 2½ per cent under the previous low of a decade; barometric scrap priced, for some grades, the cheapest this century; stock market values still crumbling; political disaster to the administration at Washington; congress for two years a stalemate at best. And yet, so thoroughly has sentiment in steel been liquidated, the industry has suffered no further depression. It remains confident any further revision in output or price will be minor. . . . Washington continues the focal point. The President says, commendably, concerning the Nov. 4 elections: "The job for the country now is to concentrate on further measures of co-operation for economic recovery." (Page 23) The Republicans maintain a fragile paper majority in congress. The Democratic tender of co-operation is accepted without too much show of looking a gift horse in the mouth. The practical politics of the situation is that neither party can make headway in the next congress, no major legislation is probable, the specter of 1932 will be uppermost. In the coming short session, business will be most interested in continuation of last year's tax reduction.

Shun Tariff Law but Adjust Rates

While Democrats state they will not seek a general revision of the tariff and Republicans are certain not to propose one, the reorganized tariff commission continues to hear applications for adjustments. Makers of woven wire fencing contended last week that even the 50 per cent increase permissible under the law would not offset lower foreign production costs, and suggested that the 45 per cent duty be imposed on American rather than foreign valuation (Page 25). . . . Canada, meanwhile, is giving a practical illustration of her tariff policy. The dominion admitted tin plate practically free when there was no domestic production, but has raised the duty measurably (Page 25) now that the United States Steel Corp.'s Canadian subsidiary has completed its plant at Ojibway.

Charge Reds Absorb Half Manganese Cost

Meeting in Washington, domestic producers of manganese ore, who would invoke the anti-dumping provisions of the tariff law against Red Russia, charge that it costs the Reds $23.97



Modern design in blast furnace construction is to be noted in these stacks built by the Russian soviet at Kerch, in the Crimea. The plant's annual capacity is 420,000 tons of pig iron and 300,000 tons of rolled material.

for every ton of manganese they are now offering at Atlantic ports for $12.50 (Page 26). Steelmakers are practically a unit in discounting the value of domestic deposits of manganese, but two war department officials, addressing the American Manganese Producers' association, evidenced interest in developing a home supply.

Welding Opens Up Huge Pipe Market

Consumption of steel incident to transportation of gasoline and natural gas by pipeline may total 15,000,000 to 20,000,000 tons over the next three to five years, is the finding of an engineer surveying the prospects of the steel pipe industry (Page 25). This market is credited almost entirely to the development of welding, making possible better and cheaper construction. Interesting data on the cost of various-size lines and some of the unusual problems encountered are presented. . . . Pipe of a different nature will be one of the products flowing from the new wrought iron plant recently put into operation near Pittsburgh (Page 43). Two tilting open-hearth furnaces are utilized not for the production of steel but of slag of a definite composition for processing wrought iron by a five-stage method which affords a 3-ton ball in 3 minutes without expenditure of human labor.

Someone's Christmas Will Be Spoiled

After four and one-half months, the lawsuit at Youngstown, O., whereby the Eaton interests would block the proposed Bethlehem-Sheet & Tube merger has been concluded. At a night session last Friday (Page 27) Common Pleas Judge Jenkins heard the last argument, which was on behalf of the plaintiffs, then delivered a valedictory address. Spectators and opposing counsel shook hands, forgetting the acrimony which has been exchanged since June 25, and the hard-fought matter was put to rest until the decision, which the court promises at Christmas time. . . . Temporarily, some of the many counsel participating in the trial will swell the list of unemployed, but they will not benefit from the relief plan devised by Sheet & Tube (Page 32), somewhat on the order of that announced last week by Inland. . . . At Washington, the President and the Woods commission continue to spur state and municipal governments, the President planning to ask congress (Page 23) for an emergency building appropriation.

Are Building Large Reserves of Scrap

No little credit for the good morale of steel accrues to the low condition of stocks, insuring that when consumers begin to buy the mills will begin to roll. A survey (Page 24) discloses negligible accumulations of steel by users. Mills have piled little semifinished steel, and blast furnaces pig iron moderately. But scrap is so cheap some large users are building up reserves of scrap as they already have reserves of ore and coal. . . . Taking cognizance of the havoc wreaked on prices by shading extras, sheet mills have revised many extras applying to black and full-finished sheets, resulting in saving to buyers of as much as $6.64 per ton (Page 29). On autobody sheets a single extra for drawing quality has been adopted. Regulations governing pool cars also have been revised. . . . Ordinarily a purchase of pig iron by the American Radiator & Standard Sanitary Corp. is accepted as an indication the market is at bottom. A 50,000-ton transaction this week, while probably made at or close to the bottom, must also be construed (Page 77) in the light of being a bargain offer by a southern maker desiring to move an accumulation of sand-cast iron. . . . Viewed statistically (Page 36), American business still is dragging bottom. Economists await a drop in retail prices.

Violet Rays Will Speed Work

Exclusion of windows in a new factory building now being erected will bar natural light (Page 48) but the ability to see and the speed of vision will not be affected. Artificial light with ultra violet rays introduced, humidifiers, heaters, coolers, exhausters and acoustical flooring and siding will insure the health and comfort of the employes. . . . Rustproof, fireproof and long service are some of the advantages of railroad ties made of steel (Page 54). Tie plates spot welded to the tie afford reinforcement beneath the rail and a wrench is the only tool required to remove fastenings without disturbing the ballast or moving the rail. Automatic electric welding of cylinders 2 to 12 feet in diameter and 2 to 36 feet long is accomplished by a specially designed machine, recently installed in a plant in Texas for welding oil field equipment (Page 52).

Steel Climbs To Fight Fires

Steel lends a helping hand, or possibly a helping arm, in combating fires in tall buildings, portable 65-foot water towers employing a sizable amount of steel becoming standard equipment for modern fire fighting. High-pressure pipelines, hydrants and extinguishers also absorb a fair tonnage of steel (Page 65). . . . Manhole covers, boiler fittings, pipe flanges and other large-size and heavy-gage plate specialties are fabricated in a new hydraulic press shop recently established in the East. An oil-fired rotary furnace handles material for hot working (Page 50). . . . Inordinate hardness increase caused by cold working chrome-nickel steels is explained by the fact that the metal is transformed from its undercooled or austenitic state to a condition similar to martensite, an intensely hard constituent (Page 57).

Hostile Congress Year Off, but Hoover Program Ending

WASHINGTON—In the cool gray dawn of the morning after, business and industrial leaders are beginning to wonder what, if any, effect the election will have on industry, and on presidential, legislative and administrative policies.

It must be borne in mind, in the first instance, that so far as the legislative situation is concerned, President Hoover will not have to bother about that for 13 months unless some emergency forces him to call a hostile congress in extra session.

As this is written, Republicans have retained a paper majority in both the senate and house but this means nothing because of the many changes probable before the new congress convenes.

The present standing of the senate is 48 Republicans, 47 Democrats and 1 Farm-labor. In the house there are 218 Republicans, 216 Democrats and 1 Farm-labor. These figures are likely to be changed materially through deaths, resignations and contests before December, 1931.

House Vote Is Close

At present there are 22 vacancies in the house of representatives. The closeness of a vote in the house might be controlled by the inability of some member to reach the city or the house chamber in time for even an important record vote.

The one outstanding thing for business is that the congress holding sway during the last two years of the present Hoover administration will be a "do nothing" congress, and business has been contending for a long time that it wants a rest from legislation and regulations. It is probable that it will get just this rest from that new congress.

Those near the administration who have been approached on the subject point out that the President's policy toward the commissions of the government which deal with business will not change because of the election other than the fact that he will probably continue to prod the tariff commission for quicker decisions.

So far as the new congress is concerned, it might affect the government commissions, especially the federal trade, by the passage of simple resolutions which do not call for a signature by the president.

Resolutions calling for merger investigations by the federal trade commission might be passed by either house of congress and the President would have no way of stopping those. On the other hand, it would be impossible for congress to pass any bill to which the administration was opposed because of the President's veto power.

There have been veiled references in the press the past few days that if Democrats got control of congress or could sway enough votes they might rewrite the tariff.

The President has the veto power over such a measure and it is inconceivable that President Hoover or any other Republican president would sign a tariff bill initiated by Democrats.

In addition, neither Democrats nor Republicans would care to sponsor a tariff bill immediately previous to a national election. All indications point to the fact that the congress which convenes in December, 1931, will simply mark time and that legislatively it will remain at a standstill.

In connection further with the tariff, Senator Harrison, of Mississippi, ranking Democratic member of the senate finance committee, and J. J. Raskob, chairman of the Democratic national committee, have stated that even if they could control congress they would not want to revise the tariff at this time. The formal tender of co-operation by Democrats has been accepted.

At the end of the coming short session of congress convening Dec. 1 the President probably will have completed his legislative program for his present term on the basis that it will be almost impossible for him to get any "pet" schemes through.

As to changes in policies during the remainder of his term of office, those in a position to know here do not seem to think that there will be any changes, due to the election.

The final outcome of legislative and adminstrative policies of the present administration, therefore, at present is a closed book, other than the fact that it is a safe conclusion to assume that little, if any, legislation will be enacted which will affect business one way or the other.

Hoover To Ask Special Building Fund; Woods Spurs Local Job Relief

WASHINGTON—When congress convenes Dec. 1 President Hoover will propose an emergency appropriation, the sum being yet undetermined, to permit the government to proceed with building projects planned but not yet financed. Already, federal building projects approximate a half billion dollars.

Col. Arthur Woods, head of the President's unemployment commission, last week conferred with 44 governors by telephone. By radio he also got in touch with many mayors. Representatives of building associations, including Charles F. Abbott, secretary, American Institute of Steel Construction, met with Colonel Woods.

"The job for the country now is to concentrate on further measures of co-operation for economic recovery."
—President Hoover

The shipping board has announced also that it has directed the emergency fleet corporation to issue advertisements and specifications for bids looking to the sale of 45 idle government owned steel vessels for dismantling and scrapping or for conversion to barges with the under-

(Concluded on Page 32)

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Scrap Stocks Big; Industry's Other Inventories Light

CONSUMERS of steel can promptly cut off receipts as their requirements dictate, but producers are less elastic and some accumulation by them in slack times is inevitable.

A survey of important producers discloses only moderate stocks of pig iron at blast furnaces and comparatively light stocks of semifinished material at the mills. Any improvement in demand, therefore, will be reflected speedily in production.

Stocks of scrap, however, are the largest in many years and still are mounting, due in some measure to the fact prices have not been so low for some "key" grades in several decades. A change of consumers' policy also is indicated.

An important steelmaker, for example, now regards scrap, of which it has almost 400,000 tons thrown down, in the same light as other raw materials. It has many years' reserves of iron ore and coal in the ground; it now proposes to make itself independent of market fluctuations in the price of scrap.

Deterioration, it finds, is negligible. In fact, it is now stocking its own heavy scrap, such as crop ends, and is buying low-price light scrap for immediate consumption.

Excepting scrap, however, material stocks in producers' hands are not large. Consumers' inventories, of course, have long been low. Apparently, the steel industry will be sensitive to the first signs of revival of general purchasing power.

Reserves at Pittsburgh Are Only Moderate

PITTSBURGH—Production of pig iron has been well regulated to consumption, and stocks at blast furnaces and on consumers' yards are moderate. Steel producers have piled the maximum iron they usually do in slack periods, and have dropped surplus ironmaking capacity.

Stocks of scrap are regarded as moderate. They are slightly smaller than a year ago, but since consumption has declined sharply, stocks are larger than a year ago if the rate of melt be considered.

The steelmaker in this district usually carrying a large stockpile of scrap, 75,000 to 100,000 tons, now has more than this on hand. Scrap prices for several weeks have been at the point where accumulation would seem advisable, but little such business has developed.

Semifinished steel stocks are reported little more than normal by most mills.

Pile Scrap in East as Pig Iron Nears Stocking Zone

NEW YORK—Eastern Pennsylvania steel plants for some time have been accumulating steel and iron scrap. On the basis of recently prevailing prices, money invested in scrap piles is expected to bring a much better return than in almost any other way.

It naturally is assumed by the steel mills that business is going to get better and when it does prices on scrap will climb, as they always have. To such an extent has this assumption been acted on that scrap piles at some plants in the East are the largest in history.

Whether or not the market has reached bottom is not bothering purchasers, as they figure on a steady rate of accumulation at a low average price.

Otherwise there has been no stocking of steel and iron. Steel mills in certain cases are accumulating some stock of cold ingots, due to operating necessities. There has been no stocking of pig iron at consuming plants, so far as is known. There even has been a disposition not to buy for first quarter on the part of certain consumers who generally act well ahead.

It may be said, however, that four or five large Eastern pig iron consumers now are considering the purchase of large tonnages of pig iron for forward requirements. These particular concerns have plenty of money and are figuring on doing what they have done on previous occasion—that is, laying in large stocks of pig iron when they thought the bottom had been reached and prices were due for a rise.

These companies in the past have made profits running into several dollars a ton on such transactions. Whether they will buy shortly remains to be seen, but at least they have been giving consideration to this matter the past week or two.

Chicago Stores Much Scrap, Some Iron, Little Steel

CHICAGO—While tremendous tonnages of iron and steel scrap have been stored by steelworks and large foundry melters, surveys reveal no topheavy accumulations of other raw materials. Somewhat abnormal stocks of pig iron have been built up, but semifinished steel storage is light.

Estimates vary, but conservative views are that fully 300,000 tons of iron and steel scrap now is being held by melters. One independent steelworks is estimated to have storage piles of 75,000 to 80,000 tons of heavy melting steel and other grades. Another has about 30,000 tons.

A steelworks just outside the Chicago switching district is estimated to have a scrap pile of 100,000 to 125,000 tons. A car wheel foundry has 5000 tons of cast grades, while a railroad supply manufacturer has 6000 tons of cast and specialties.

Scrap yard interests estimate that if the steel industry were to move into normal production today, plants in this district would not need to come into the market for open-hearth grades for at least 90 days.

Cast borings stocks for blast furnace use have reached unusual volume, and the price has dropped to the lowest point in severel decades. Only three large melters absorb the borings marketed in this district, and they have stocked 65,000 to 75,000 tons.

Pig iron stocks, while somewhat above normal, are lighter than recent reports would indicate. Merchant furnace interests have what would amount to 30 to 45 days' stocks under normal shipping instructions.

Stocking of semifinished steel has been almost negligible. Moderate tonnages of sheet bars have been accumulated as the result of variable

orders in the last few months from the automotive industry. Otherwise, semifinished stocks are light.

Stocks 35,000 Tons Scrap

DETROIT—Scrap stocked by a steelmaker in this district approximates 35,000 tons, sufficient for five to six months at the present rate of operations.

Consumers' stocks of finished steel and pig iron are negligible, save for considerable laid down by Chevrolet. Foundries taking pig iron in by water have fair stocks, but not abnormal considering the nearby close of navigation.

Blast furnaces at Toledo, O., are reported to have about 45,000 tons of iron piled, less than half the accumulation of 1922, and about normal.

Fence Makers Ask Duty on American Valuation

Washington—Domestic producers of woven wire fence, at a hearing before the United States tariff commission last week, declared that a 50 per cent advance in the present duty of 45 per cent on foreign value would not aid them.

Instead of the maximum advance permissible under flexible provisions of the tariff, domestic manufacturers proposed that the 45 per cent rate be applicable to American value. Even this, it was declared, would fall 9½ per cent below the costs here, it was claimed. Importers proposed any such change.

John G. Lerch was attorney for the domestic interests. Reese D. Alsop, of New York, represented Trefileries Leon Bekeart of Sweveghem, Belgium. George E. Dix, president of the Steel Union Co., New York, and also speaking for Steel Inc., of Los Angeles, and Corn & Dehn Hardware Co., of Seattle, was the principal witness for the importers. Raymond S. Southwell, sales manager of the Wickwire-Spencer Steel Corp., was the witness for the domestic interests.

Raises Tin Plate Tariff

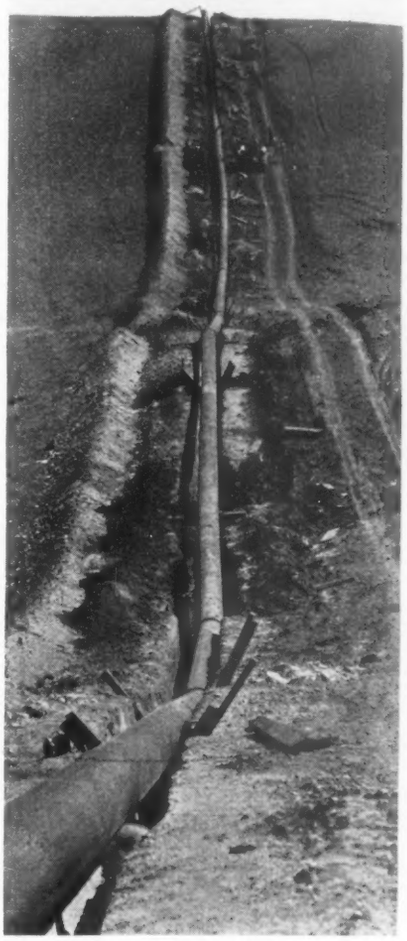
Toronto, Ont.—Under a ruling of the Canadian department of national revenue, the duty on tin sheets or plates has been increased to 7½ under British preference, 12½ under the intermediate, and 15 per cent under the general. The former rate was free under British preference, and 5 per cent under intermediate and general, tin plate not being made in Canada. United States Steel Corp. has completed its tin plate mill at Ojibway, Ont., and can now supply the Canadian market.

Heavy Steel Pipe Tonnage Rewards Electric Welding

AS A REWARD for its contribution to development of better pipe for transmission of oil, natural gas and gasoline over distances far greater than formerly deemed possible, the pipemaking division of the steel industry is promised a probable demand for 15,000,000 to 20,000,000 tons of steel pipe in the next three to five years.

This is the conclusion of R. E. Baker, secretary and treasurer of Arthur G. McKee & Co., engineers, Cleveland, who has made a study of pipe lines and factors affecting their efficiency. Among facts relating to pipe and pipe lines Mr. Baker has gathered many of great importance to the steel industry, which are summarized here.

Until 1927 a line for transmission of gas more than 250 miles was considered an engineering phenomenon. With assured supplies of gas, decreased line construction cost and suitable pipe for high pressures were needed. This was made possible by development of electrically welded steel pipe and seamless pipe, which has largely replaced screwed lapweld pipe. Its value lies in greater strength for the same weight and absence of weld weakness, longer lengths making laying cheaper.



Electrically welded pipe 16 inches in diameter, to withstand 800 pounds per square inch pressure, weighs 157 tons per mile less than lapweld, a saving of about $11,000 per mile for cost of pipe and $2000 per mile in freight charges.

Four electrical welding processes have been developed, the arc weld of the A. O. Smith Corp., Milwaukee; electric resistance weld of the Republic Steel Corp., Youngstown, O.; induction weld of the Youngstown Sheet & Tube Co., Youngstown, O.; arc weld of the National Tube Co., Pittsburgh.

Yearly capacity of the Smith corporation is 1,500,000 tons and of the Republic corporation 420,000 tons, while the other two producers still are developing their production units.

Present potential pipemaking capacity in the United States is nearly 8,000,000 tons, divided as follows: Lapweld, 2,900,000 tons; buttweld, 932,000 tons; seamless, 1,735,000 tons; electric weld, 2,200,000 tons. Electrically welded pipe has moved from practically nothing to second place in the last three years. In that time lapweld pipe has not increased its production.

Weight Determines Cost

The principal cost of a pipeline is in the pipe and varies directly as the weight. Increased diameter requires thicker walls for the same pressure but capacity increases more rapidly than cost, making large-diameter pipe economical. The tendency at present is to increase pressure and deliver gas at high pressure through smaller pipe, up to 1500 pounds per square inch. It is believed that while the construction cost is higher, the cost per cubic foot of gas may be less.

Pipe cost is 60 to 70 per cent of the total for 6 to 10-inch lines, about 43 per cent for 10-inch lines, including pumping stations, and 40 to 50 per cent for 24-inch lines. Pipe cost varies with size, while other factors are much the same for all sizes.

Field welding has given better joints and reduced losses. Shop welding of several lengths, at lower cost than field welding, has given a further reduction with equal savings.

(*Concluded on Page* 98)

Say Manganese Costs Soviet Twice American Sale Price

WASHINGTON—Cost of a ton of soviet manganese ore delivered at Atlantic ports of the United States without duty paid is $23.97, based upon statements and records of the soviet government, declared J. Carson Adkerson, president, American Manganese Producers' association, at the opening, Nov. 10, of the association's two-day session here.

"This ore," said Mr. Adkerson, "is being sold today at $12.50 per ton. To this price must be added the duty and the freight to Pittsburgh. The soviet agents have offered to undersell any domestic producer regardless of what price may be quoted. Under such conditions the domestic industry cannot compete.

Traces Manganese Growth

"The manganese industry has just passed through one of the most strenuous periods of its history. Production of low grade manganese ore in the United States during 1929 was 1,200,000 tons. Production of high grade ores increased from 13,000 tons in 1922 to 60,000 tons in 1929. Output of high grade ore during 1928 was 45,000 tons; in 1929 it was 60,000 tons, or an increase of over 30 per cent.

"Plants already producing or ready to produce during the early part of this year had a rated capacity of over 200,000 tons per year, or a possible increase over 1928 of 400 per cent."

Frederick H. Payne, assistant secretary of war, told the producers that "we take a deep interest in the efforts of the domestic manganese producers to develop processes that would enable the United States to utilize its large deposits of low-grade ore and be at least partially self sustaining in this respect. The existence of an organization such as the American Manganese Producers association implies a mobilization of the nation's mangangese resources and makes available a direct means of contact with the industry."

Termed Strategic Commodity

Maj. Alfred H. Hobley, also of the war department, told the convention that "from a strictly military viewpoint, the war department has listed 26 commodities and raw materials as 'strategic' i. e., which are not produced in this country in sufficient quantities to meet estimated military requirements. Of course, some of these strategic materials are of more importance than others, but there is little question regarding the pre-eminent position occupied by manganese."

At the annual banquet, Nov. 10, Rep. Hamilton Fish Jr., New York, chairman of the congressional committee investigating communistic activities in the United States, invited manganese producers in addition to laying their dumping case before the treasury department to do the same before his committee.

Bernard S. Barron, general counsel for the association, told the committee Nov. 10 that soviet dumping of manganese has already "collapsed" the American manganese industry.

Representative Fish said that in his opinion it will be necessary to place an embargo on manganese and other products being dumped in the United States from Russia in order to remedy the situation. Congress will be willing to grant such an embargo, said Mr. Fish. American labor, he stated, cannot compete with the forced labor of Russia."

Brief was filed Nov. 10 with the customs bureau, treasury department, by the association in connection with application for an embargo. The brief contains a summary of the hearings held in the case up to this time.

The brief also takes up the attitude of the state department, and number of other matters including tabulations of Russia's cost of production for manganese which Mr. Adkerson, president of the association, had promised the department.

Affirm Cost of $23.97 a Ton

These tabulations have been compiled, the brief states, "by the world famous expert on manganese, Datico Zereteli." Figures are for 1913, 1922 and 1923 for the Tchiaturi district of Russia. It is shown as the result of the tabulations that "c.i.f. cost in this country, without the addition of any profit is, $23.97 per ton."

"Despite the fact," says the brief, "Russia is selling her manganese in this country at 25 cents and less per unit, or almost 50 per cent less than the cost of productoin."

In conclusion the brief says that "if we do not enforce the anti-dumping act in this case, we will then be giving to Soviet Russia, whom we declare as unworthy of recognition, rights and perogatives which only those nations have whom we recognize, yet with none of the duties and obligations that come from such recognition."

Mr. Adkerson was re-elected president of the association. All other officers and directors were re-elected and several new positions were creafed: James W. Gerard, former ambassador to Germany, chairman of the board; Will B. Daley, second vice president; Leslie L. Savage, third vice president; and C. K. Woodbridge, director.

STEEL! MORE STEEL! IS THE CRY IN RUSSIA
"The great task facing us today," says the Russian soviet government, "is to secure maximum economic development in the shortest possible time. This task is being solved by the manufacture of pig iron and steel." Russia hopes to win fourth place among the world producers of pig iron in the year 1931-32. *Here Russians are seen piling steel ingots at the Tomsky works in the Donetz basin*

Sees Equipment Sought

United Engineering & Foundry Co., Pittsburgh, reports expenditure of between $50,000,000 and $75,000,000 by steelmakers for new mill equipment is more or less definite, explaining that steel companies today are not interested in expansion to nearly the extent they are in reduction of costs, and that current state of general

business is adding to early prospect of their expenditures for equipment.

Expect Merger Statement

Pittsburgh—Early announcement of acquisition of the McClintic-Marshall Co. by the Bethlehem Steel Co. is expected here. Officials will not comment, but negotiations are understood to have been completed.

An unverified report is that an independent steelmaker in the Pittsburgh district will also pass to Bethlehem.

Tractor Plant Makes Jobs

International Harvester Co.'s Farmall works, Rock Island, Ill., now is producing 80 tractors a day despite the fact autumn orders were well under 1929. The surplus tractors are being stored but the company desires to maintain the current rate to help employment in the Tri-Cities district. Officials state no increase in schedules for the Farmal plant is likely until in January.

Steel Club Elects

Philadelphia—Steel Club of Philadelphia has elected officers for the ensuing year: President, S. H. Baker, Sharon Steel Hoop Co.; vice president, H. W. Merriman, Alan Wood Steel Co.; and secretary-treasurer, F. L. Stephenson, Bethlehem Steel Co. New members of the board of governors are Alex Cameron, Lukens Steel Co., and W. O. Lange, Phoenix Iron Co.

Wage Disbursements Up

Youngstown, O.—Wage disbursements in the district advanced 1.69 per cent in October. October's payroll was $6,161,975 against $6,057,795 in September and $7,551,331 in October, 1929. Last month's increase was due in part to an additional working day and was made in spite of further declines in steel operations.

Specify Stainless Better

Republic Steel Corp., Youngstown, O., reports specifications for stainless steel received in October were 32 per cent greater than in September. Aviation, automobiles and buildings are the lines showing greatest interest.

Reports Large Bookings

Allis-Chalmers Mfg. Co., Milwaukee, reports unfilled orders as of Oct. 31 valued at $15,322,000. This compares with $14,545,000 at the end of September, and with $13,917,000 at the end of October, 1929.

Youngstown Merger Trial Ends; Judge Has Next Word

END came to the protracted Youngstown Sheet & Tube-Bethlehem Steel merger injunction trial Nov. 7 before Judge David G. Jenkins at Youngstown, O. A night session was necessary to carry the proceedings to conclusion. The trial had started June 25.

Newton D. Baker, former secretary of war, last Wednesday began final argument for the pro-merger side. He contended that under the Ohio corporation law the Youngstown Sheet & Tube Co. had the right to name a closing date by which it could ascertain for voting purposes the identity of stockholders of record at a certain definite time. Further, he argued constitutional questions involved, declaring the statutes authorize a "separation of voting power from beneficial interest."

Exhibits Eaton's Ramified Interests

The speaker exhibited to Judge Jenkins an interlacing chart of the various Eaton interests radiating from the Cleveland financier in the center, declaring it "an evil thing, evil in its power and evil in its influence."

Charles F. Smith, Youngstown attorney, was the first speaker for the plaintiffs in closing for the opposition, being immediately followed by his co-counsel, Harry J. Crawford, Cleveland attorney. Mr. Smith resented Mr. Baker's intimation that Mr. Eaton was interested in the wreck of the first Sheet & Tube-Inland Steel Co. merger negotiation.

Mr. Crawford based one portion of his attack upon the merger contract upon the theory that, since the Sheet & Tube directors did not ratify the contract following the April 8 meeting of stockholders which authorized the merger contract, therefore that instrument is invalid.

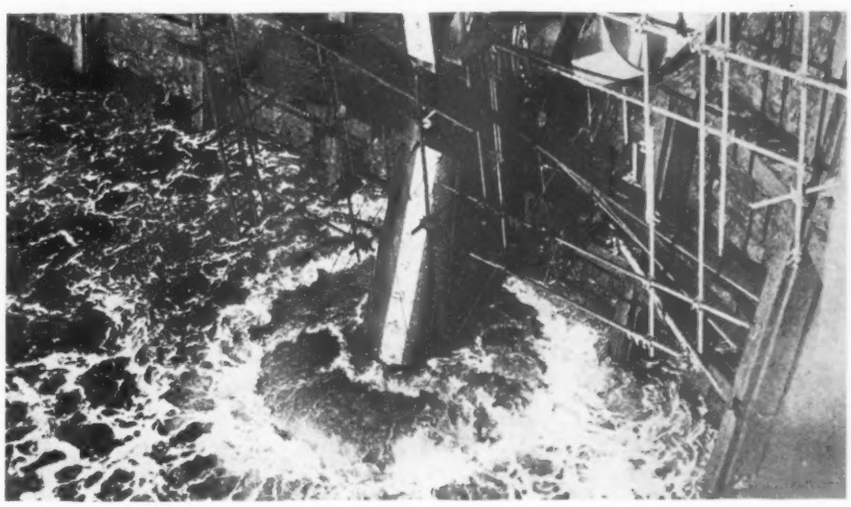
Judge Jenkins expressed gratitude to counsel for their help in getting to the heart of this complex case and for maintaining the trial upon a high plane.

It is believed Judge Jenkins is not likely to announce his decision before the Christmas holidays, but at least about that time, because on Jan. 12 his associate at Youngstown, Judge Gessner, will take testimony in fixing the fair cash value of Sheet & Tube shares, as demanded by dissenting stockholders.

Aluminum Group Optimistic

Cincinnati—Reports from district managers and sales representatives of Aluminum Industries Inc., meeting here for a conference at the plant, showed confidence for an imminent business upturn throughout the United States, except the extreme Northwest.

Prospects were called especially bright in the West and far West, with confidence shown that automotive demand will have a decided spurt early next year.



—Wide World Photo

CLAIM TIDE CUTS ELECTRICITY COST IN HALF

What is said to be the first practical effort to harness tidal power was recently demonstrated at Avonmouth, Eng. The photo shows the discharge at low tide

Ingots in Steady Decline; October Off 8.6 Per Cent

STEEL ingot production in October declined 8.6 per cent, on a daily basis, and at 100,756 gross tons daily was at the lowest point since August, 1924. Excepting a slight upturn in August, the ingot rate has fallen steadily since March of this year.

The October daily rate compared with 110,307 tons in September, and was 40 per cent below the 167,938 tons of last October. Relating operations to capacity, October was a 50.32 per cent steel month, contrasted with 55.1 per cent in September and 85.64 per cent last October.

October's total output of open-hearth and steel was 2,720,414 gross tons, according to the American Iron and Steel institute, New York. This compares with 2,867,978 tons in September and 4,534,326 tons in October, 1929.

For ten months, the output of open-hearth and bessemer ingots stands at 35,410,283 tons, or 26 per cent below the 47,888,156 tons of the first ten months of 1929. Steelmaking operations thus far in 1930 have averaged 68.02 per cent of capacity; a year ago they had averaged 93.92 per cent, and for all of record 1929 they were 89.05 per cent.

On the basis of 136,193 tons daily for the first ten months of 1930, the year's open-hearth and bessemer ingot production should total 42,356,023 gross tons. In record 1929 the total was 54,312,279 tons.

Steel Ingot Production—1929-30

94.27 Per Cent of Industry Reporting

Gross Tons

1929	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	Number of working days	Approximate daily output all companies	Per cent of operation
Jan.	3,692,062	549,616	4,241,678	4,500,209	27	166,674	84.99
Feb.	3,590,826	489,279	4,080,105	4,328,789	24	180,366	91.97
Mar.	4,180,408	596,691	4,777,099	5,068,265	26	194,933	99.40
Apr.	4,025,409	640,351	4,665,760	4,950,139	26	190,390	97.08
May	4,275,161	707,484	4,982,645	5,286,339	27	195,790	99.84
June	3,999,363	622,585	4,621,948	4,903,657	25	196,146	100.02
July	3,922,053	649,950	4,572,003	4,850,668	26	186,564	95.13
Aug.	3,987,400	668,023	4,655,423	4,939,172	27	182,932	93.28
Sept.	3,624,954	642,886	4,267,840	4,527,966	25	181,119	92.35
Oct.	3,631,674	642,235	4,273,909	4,534,326	27	167,938	85.64
10 mos.	38,929,310	6,208,519	45,137,829	47,888,156	260	184,185	93.92
Nov.	2,796,214	522,672	3,318,886	3,521,173	26	135,430	69.06
Dec.	2,375,797	360,489	2,736,286	2,903,063	25	116,123	59.21
Total	44,101,321	7,092,261	51,193,582	54,313,845	311	174,643	89.05
1930							
Jan.	3,137,002	441,572	3,578,574	3,796,090	27	140,596	70.22
Feb.	3,336,021	508,618	3,844,639	4,078,327	24	169,930	84.88
Mar.	3,513,904	539,616	4,053,520	4,299,905	26	165,381	82.60
Apr.	3,406,610	509,234	3,915,844	4,153,860	26	159,764	79.80
May	3,265,190	528,968	3,794,158	4,024,778	27	149,066	74.45
June	2,835,527	407,586	3,243,113	3,440,239	25	137,610	68.73
July	2,411,592	353,723	2,765,315	2,933,399	26	112,823	56.35
Aug.	2,543,466	374,467	2,917,933	3,095,293	26	119,050	59.46
Sept.	2,273,668	429,975	2,703,643	2,867,978	26	110,307	55.10
Oct.	2,164,830	399,704	2,564,534	2,720,414	27	100,756	50.32
10 mos.	28,887,810	4,493,463	33,381,273	35,410,283	260	136,193	68.02

Figures exclude crucible and electric ingots. Operating percentages for 1929 are based on capacity of 60,990,810 gross tons as of Dec. 31, 1928; for 1930 on capacity of 62,265,670 tons as of Dec. 31, 1929.

Galvanized Ware Shows Upward Turn in Shipments

September shipments of galvanized sheet metal ware were 163,185 dozens, in comparison with 147,181 in August. Production of all pails and tubs held the August rate. Galvanized ware in the following, according to the department of commerce, is the product from dipping made up shapes in zinc and not utensils of galvanized sheets:

(In dozens)

1929	Pails and Tubs Production	Pails and Tubs Shipments	Other Ware Production
Sept.	113,698	120,297	46,594
(9 mos.)	1,279,167	1,313,658	430,030
Oct.	129,282	135,197	45,117
Nov.	102,400	90,684	32,951
Dec.	112,962	107,733	33,114
Total year	1,624,811	1,647,272	541,212
1930			
Jan.	145,588	154,731	33,982
Feb.	119,739	129,853	35,121
March	135,178	135,602	37,963
April	131,015	120,552	44,058
May	113,645	107,496	44,405
June	89,982	82,956	40,646
July	91,879	104,096	42,056
Aug.	103,050	103,354	46,730
Sept.	103,177	116,875	38,218
(9 mos.)	1,033,253	1,055,515	363,179

Foundry Output Rises

Worcester, Mass.—Foundry council, composed of 11 foundries, produced 2,117,590 pounds of castings in September, a gain from the low for the year set in August. Nine-month aggregate lags 45 per cent behind the corresponding time in 1929. Monthly totals follow:

1929	
September	3,946,064
(9 mos.)	42,583,413
October	4,456,646
November	4,108,685
December	2,819,796
Total, 1929	51,968,540
1930	
January	2,862,705
February	2,786,850
March	3,160,872
April	3,337,292
June	2,675,042
July	2,068,084
August	1,879,655
September	2,117,590
(9 mos.)	24,147,785

Steel Barrels Make Gain

September output of steel barrels, averaging 45,500 daily, represented 36.7 per cent capacity of members reporting to the Steel Barrel Manufacturers association, Cleveland, during the month. Total number of barrels shipped was 359,308 units. For August, production was at 31.6 per cent of capacity and during that month 367,422 barrels were shipped.

Coke Again Depressed

September continued to show decline in by-product coke production, with 3,401,417 net tons, compared to August's 3,637,339 tons. Beehive coke was also off, though the decline was small, according to the bureau of mines. During the month Weirton Steel Co. fired a new battery of 25

Koppers-Becker ovens at Weirton, W. Va. Output comparisons follows:

(In net tons)

	By-product coke	Beehive coke	Total coke
1929 Sept.	4,413,011	504,300	4,917,311
(9 mos.)	40,363,248	4,786,600	45,149,848
1930 Sept.	3,401,417	168,100	3,569,517
(9 mos.)	35,868,579	2,277,400	38,145,979

Unfilled Steel Orders Up

Unfilled orders of the United States Steel Corp. increased in October for the first time since July, gaining 57,425 tons and bringing orders on the books to 3,481,763 tons as of Oct. 31. This compares with unfilled orders of 3,424,338 tons on Sept. 30 and 4,086,562 tons on Oct. 31, a year ago, as the following monthly figures show:

Date	Total	Change, tonnage	per cent
1929			
Jan. 31	4,109,487	132,775+	3.34+
Feb. 28	4,144,341	34,854+	0.84+
Mar. 31	4,410,718	266,377+	5.70+
April 30	4,427,763	17,045+	0.38+
May 31	4,304,167	123,596—	2.88—
June 30	4,256,910	47,257—	1.10—
July 31	4,088,177	168,733—	3.90—
Aug. 31	3,658,211	429,966—	10.50—
Sept. 30	3,902,581	244,370+	6.68+
Oct. 31	4,086,562	183,981+	4.71+
Nov. 30	4,125,345	38,783+	0.95+
Dec. 31	4,417,193	291,848+	7.74+
1930			
Jan. 31	4,468,710	51,517+	1.20+
Feb. 28	4,479,748	11,038+	0.25+
Mar. 31	4,570,653	90,905+	2.03+
April 30	4,354,220	216,433—	4.73—
May 31	4,059,227	294,993—	6.78—
June 30	3,968,064	91,163—	2.24—
July 31	4,022,055	53,991+	1.36+
Aug. 31	3,580,204	441,851—	10.9—
Sept. 30	3,424,338	155,866—	4.35—
Oct. 31	3,481,763	57,425+	1.68+

The metal trades of Los Angeles district represent 976 separate establishments employing 37,500 people with a weekly payroll of $1,500,000, and a value of output of $213,000,000.

New Sheet Extras Give Savings; Pool Cars Revised

RADICAL revisions of extras applying to black and full-finished steel sheets are announced by the American Rolling Mill Co. Price reductions of significant proportions will result from introduction of these new size and drawing differentials. Savings to consumers will range upward to several dollars a ton.

On full-finished sheets from 42 to 72 inches wide the reduction is $6.64, compared with quotations based on the former extra card. In the 21 gage and heavier range, the new list will mean savings averaging $2.86 a ton on one-pass black sheets.

Another innovation is the application of the new differentials to one-pass black sheets and to all other grades of hot-rolled pickled and pickled full-finish sheets. These size extras, however, will be used by the Middletown producer only when the ordered area does not exceed 40 square feet. Manufacturing problems involved in making sheets with an area over 40 square feet have caused insertion of a clause stipulating that quotations on such sheets be supplied by the mill only upon application.

Single List Adopted

Simplification of the extra card has been achieved by adoption of a single list of extras for drawing quality in place of the former extras of 25 cents for deep drawing and 50 cents for extra deep drawing sheets.

These reductions in drawing quality extras have come about, in part, through adoption by the sheet steel industry of modern methods for normalizing steel.

With the past three years the sheet steel industry has invested heavily in new and improved equipment.

These improved processes have contributed steadily to savings which have been passed along to consumers. Some of these are reflected in the new American Rolling Mill Co. card. An earlier reduction in width extras was announced by sheet mills last February.

Accompanying tables give the new width, length, and drawing extras.

Pool Car Extras Are Changed

Effort to effect more orderly distribution of sheet steel through pool car shipments is seen in an announcement of policy by a leading sheet steel producer.

This specifies the minimum quantity for shipment in pool cars as 25 bundles and indicates a minimum extra over the carload price of 25 cents per hundred pounds. Smaller quantities, states the bulletin, should be sold from warehouses.

On mill orders for pool car shipments to hardware and other dealers a differential of 50 cents per hundred pounds over the carload price for fewer than 10 bundles is being inaugurated. On 10 bundles to 24 bundles, inclusive, the extra is 35 cents per hundred pounds and on 25 or more bundles 25 cents per hundred pounds.

In mixed cars consigned to a single consumer the same extras apply.

WIDTH EXTRAS FOR ALL BLACK, HOT ROLLED PICKLED, AND PICKLED COLD ROLLED IRON AND STEEL SHEETS

PER 100 POUNDS

Widths U. S. S. / Gage	Over 32" to 36" Incl.	36" to 40" Incl.	40" to 42" Incl.	42" to 44" Incl.	44" to 46" Incl.	46" to 48" Incl.	48" to 50" Incl.	50" to 52" Incl.	52" to 54" Incl.	54" to 56" Incl.	56" to 58" Incl.	58" to 60" Incl.	60" to 62" Incl.	62" to 64" Incl.	64" to 66" Incl.	66" to 68" Incl.	68" to 70" Incl.	70" to 72" Incl.	Under 24" to 12" Incl.	12" to 6" Incl.	6" to 3" Incl.	3" to 2" Incl.	2" to 1" Incl.
16 & heavier	...	...	...	...	...	...	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.10	.20	.40	.80	1.30
17–18	...	...	...	.05	.10	.15	.20	.25	.30	.35	.40	.45	.55	.65	.75	.85	.95	1.05	.15	.25	.50	1.00	1.50
19–21	...	...	...	.15	.20	.25	.30	.35	.40	.50	.60	.70	.80	.90	1.00	1.10	1.20	1.30	.15	.25	.50	1.00	1.50
22	...	.20	.40	.40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.15	.25	.50	1.00	1.50
23–24	...	.20	.40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.15	.25	.50	1.00	1.50
25–27	...	.20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.20	.30	.60	1.25	1.75
28–30	.10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.20	.30	...	...	...

LENGTH EXTRAS FOR ALL BLACK, HOT ROLLED PICKLED, AND PICKLED COLD ROLLED IRON AND STEEL SHEETS

PER 100 POUNDS

Lengths U. S. S. / Gage	Over 124" to 144" Incl.	144" to 168" Incl.	168" to 192" Incl.	192" to 204" Incl.	204" to 216" Incl.	216" to 228" Incl.	228" to 240" Incl.	Under 60" to 30" Incl.	30" to 18" Incl.	18" to 10" Incl.	10" to 6" Incl.
16 & heavier	...	.50	.75	1.00	1.00	1.50	2.00	.10	.15	.25	.45
17–18	.10	.50	.75	1.00	...	...	...	.15	.25	.35	.55
19–22	.10	.50	.75	1.00	...	...	...	.15	.25	.35	.55
23–24	.10	.50	.75	1.00	...	...	...	.15	.25	.35	.55
25 & lighter	.10	...	...	...	...	...	...	.20	.30	.40	.60

The above extras for width and length apply on any sheet not exceeding 40 sq. ft. in area.

Industrial Men in the Day's News

Dr. Ancel St. John, Pioneer in Industrial X-ray Work

ALTHOUGH his enthusiasm for X-ray work was aroused at Beirut, Syria, his research work and practical application were accomplished in the United States.

WORK in four colleges was followed by a 6-year connection with Union Carbide & Carbon Corp., the first time an X-ray specialist devoted his whole time to industrial problems.

A PRIVATE consultant practice was established in 1924; a laboratory in 1925; and his own company this year.

IN THE rapid development of industrial use of X-ray testing equipment, few names stand out as prominently as that of Dr. Ancel St. John, president, St. John X-ray Service Corp., New York. When Union Carbide & Carbon Corp. engaged him 12 years ago to take charge of research work in X-ray analysis, it was reported to be the first instance of full-time employment of an X-ray specialist by a private industry. Since then this application of X-rays, has made great strides.

Born in Plainfield, N. J., in 1882, Dr. St. John and family moved to Denver in 1891, where he obtained his first knowledge of metallurgy in nearby mines during high school vacations. When the family moved to Pittsburgh in 1900 he was employed by Westinghouse Electric & Mfg. Co. Night study gave him enough credits to enter University of Rochester in 1902. Graduating in 1906 with a B.P. degree, he became instructor in physics at Syrian Protestant college, Beirut, Syria, where he first developed his penchant for X-ray work.

Prior to leaving Syria in 1909 for America he had charge of medical X-ray work at the college but always kept the physicist or technical point of view rather than the medical. He continued X-ray study as assistant in physics department, Columbia university, and in 1910 became acting professor and physics department head, Emory and Henry college, Emory, Va. In 1912 X-ray defraction was first given attention by the nation's physicists, a method which aroused Dr. St. John's interest. He started thesis work which resulted in his receiving a doctor of philosophy degree in physics.

From 1912 to 1917 he was instructor in physics, Worcester Polytechnic institute, and simultaneously was a graduate student in physics, Clark university. In 1917 he was appointed professor in physics in charge of physics department, Lake Forest, Ill., college, and also served as civilian aid in physics to the war department. Union Carbide & Carbon Corp., New York, employed him in 1918 as research physicist and during his six years with that company he discovered pseudo graphite and developed the liquid absorber method now extensively used in making X-ray exposures of castings and other irregular metal products.

In 1924 he became a consulting physicist specializing in industrial X-rays. In conjunction with Wappler Electric Co., Long Island City, N. Y., he established a private X-ray laboratory in 1925, said to have been the first independent X-ray laboratory devoted to industrial problems. Under Dr. St. John's direction at the steel show in Chicago, 1926, what was claimed to be the first exhibit of an industrial application of X-ray was made. That year his X-ray defraction analysis was the basis of a court decision involving patent rights.

In 1929 Dr. St. John pioneered in designing, building and operating portable X-ray testing apparatus for field tests of large high pressure steam pipe and fittings. In 1930 he organized the St. John X-ray Service Corp., New York, with himself as president and H. R. Isenberger secretary-treasurer.

RN. WOODS, formerly vice president, A. C. Woods & Co., Rockford, Ill., structural steel fabricator, has been elected president to succeed A. C. Woods, whose death was noted in STEEL of Oct. 30.

L. N. Woods, formerly secretary-treasurer, has been elected vice president, and H. C. Woods has been elected secretary-treasurer and director.

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Donald R. Dohner, formerly instructor in design, Carnegie Institute of Technology, Pittsburgh, has been appointed director of art, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. He will co-operate with the engineering department in designing electrical apparatus.

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T. R. Swenson, for seven years with the sales department, Danly Machine Specialties Co., Chicago, is now af-

filiated with the sales department, Midwestern Tool Co., Chicago.

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H. E. Lewis, formerly executive vice president, Bethlehem Steel Corp., Bethlehem, Pa., has been elected to the board of directors, Jeffrey Mfg. Co., Columbus, O.

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B. F. Mercer, former general superintendent, has been elected vice president in charge of operations, Union Steel Castings Co., Pittsburgh, a subsidiary of Blaw-Knox Co.

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John J. Berliss, treasurer, Roller Bearing Co. of America, Trenton, N. J., for the past 20 years, has also been elected general manager.

Carl A. Johnson, identified with Hyatt Roller Bearing Co., Newark, N. J., for the past 13 years, has been appointed director of sales, Roller Bearing Co. of America.

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B. D. Spofford, formerly advertising manager, Waco Aircraft Co., Troy, O., was appointed advertising and publicity manager, Duriron Co. Inc., Dayton, O., Nov. 1.

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Willard H. Dow has been elected president and general manager, Dow Chemical Co., Midland, Mich., to succeed his father, the late Dr. Herbert H. Dow.

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Edward James Brady Jr., formerly with Burnside Steel Foundry Co., Chicago, is now with Sivyer Steel Casting Co., Milwaukee, in the research department.

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H. D. Gates, advertising manager, Pangborn Corp., Hagerstown, Md., for many years, latterly as sales manager, has resigned to take a rest prior to assuming a new connection Jan. 1.

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G. V. Fern, Springfield, O., succeeds F. B. Zeig as president, J. B. Foote Foundry Co., Fredericktown, O., whose interest he has purchased. Mr. Zeig continues on the directorate.

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Hubert G. Granger has been made manager of purchases and traffic, Wyatt Metal & Boiler Works, Dallas, Tex., succeeding the late Ferd Hicks. He formerly was with Austin Bros., Dallas, structural steel fabricators.

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L. D. Anderson, T. J. Burke, W. T. Clark, N. H. Lagerstrom, O. J. Menke and L. V. Workman have been added to the Russian staff of Freyn Engineering Co., Chicago. They sail Nov. 15.

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Marcus A. Coolidge, president, Fitchburg Grinding Machine Co., Fitchburg, Mass., and Fitchburg Machine Co., Seneca Falls, N. Y., has been elected United States senator from Massachusetts.

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Taylor Allderdice, formerly president of the National Tube Co., Pittsburgh, has been elected secretary and manager of the Carnegie Hero Fund commission, Pittsburgh, in succession to the late F. M. Wilmot.

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Clyde C. Elmes, former superintendent, Baldwin Locomotive Works, Eddystone, Pa., was recently elected vice president and general manager, Dallett Co., Philadelphia, manufacturer of pneumatic tools, machinery and electrical equipment.

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Edward J. Kearney, secretary-treasurer, Kearney & Trecker Corp., Milwaukee, maker of milling machines, has been reappointed a member of the board for the term expiring July 1, 1935. Both are the representatives of industry on the board.

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A. J. Gerlach, advertising manager, T. L. Smith Co., Milwaukee, manufacturing large concrete mixers, paving mixers and gray iron castings, has resigned to establish his own advertising agency, 441 Broadway, Milwaukee.

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Howard P. Zeller, vice president and general manager, Donner-Hanna Coke Corp., Buffalo, has resigned effective Nov. 15 and will tour Europe. On his return about Jan. 1 he will become identified with the Jamison Coal & Coke Co., Greensburg, Pa.

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C. T. Dare, formerly with engineering companies, including H. R. Krueger Co., has been added to the sales organization of Ex-Cell-O Aircraft & Tool Corp., Detroit, covering Indiana and southern Ohio. Mr. Dare obtained his early machinery and tool experience with Hamilton Machine Co., Hamilton, O., National Cash Register Co., Dayton, O. and Moslem Safe Co., Hamilton.

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William J. Constable has resigned as manager, Point Edward, Ont., ore dock of the Steel Co. of Canada Ltd., Hamilton, Ont., and will become vice president of the new Canadian Corp., and Rexo Chemical Cleaner Co., Walkerville, Ont.

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J. E. Rushmore is now vice president in charge of operations, Wrought Iron Co. of America, Lebanon, Pa. Howard Longstreth is chairman of the executive committee. The office of president will not be filled at present.

William J. Powers, formerly of Scranton, Pa., works, has been transferred to Lebanon, in charge of sales at the main office. Frank E. Rutan Jr., formerly with Sun Oil Co., Philadelphia, now is affiliated with the Philadelphia sales force of the company.

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William J. Ketcham, former assistant to H. W. McQuaid, chief metallurgist, Timken-Detroit Axle Co., Detroit, has become chief metallurgist in charge of Oshkosh, Wis., laboratory, Wisconsin Axle Co., a division of the Timken-Detroit company.

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Charles G. Atkinson, for several years Cleveland district manager, Lockwood, Greene Inc., Boston, has become contract engineer with H. K. Ferguson Co., Cleveland, engineer and builder, working out of company headquarters, Hanna building, Cleveland.

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Gottfrid Olson, formerly foundry superintendent, Illinois Malleable Iron Co., Chicago, who for the last three years has been general manager, Katrineholm works, Pump Separator Co., Stockholm, Sweden, has returned to Chicago and again is associated with the Illinois Malleable Iron Co.

Third Quarter Reports Still Reveal Losses

Republic Steel Corp., Youngstown, O., reports net gain from operations for quarter ended Sept. 30 of $988,492 after deducting maintenance and plant repair of $2,139,328, but before bond interest and depreciation. Interest on bonds totaled $853,508 leaving profit of $134,984. Depreciation, renewal of plants and exhaustion of materials were $1,875,492, resulting in loss for the quarter of $1,740,509.

Eastern Rolling Mill Co., Baltimore, reports net loss after depreciation and other charges of $152,330 for third quarter, compared with net profit of $132,214 for the same three months of 1929.

Follansbee Bros. Co., Pittsburgh, reports net loss for three quarters of 1930 at $209,329 against net profit of $1,391,798 last year. Third quarter loss was $213,682, compared with net profit of 392,128 in 1929.

National Steel Corp., Pittsburgh, has declared regular quarterly dividend of 50 cents a common share payable Dec. 10 to holders of record Nov. 30.

Allegheny Steel Co., Brackenridge, Pa., reports net profit of $1,494,145 equivalent to $2.16 a share for nine months of 1930. For four quarters of 1929 the company reported net profit of $3,311,492, equal to $5.05 a share.

Obituaries

HARRY F. WAHR, 47, president, Mesta Machine Co., West Homestead, Pa., since Sept. 15, 1925, when he succeeded the late Frederick E. Mesta, ended his life at West Homestead, Pa., Nov. 5. He was a nephew of the founder of the Mesta company and had been in poor health for about a year.

After graduating from Western University of Pennsylvania, now University of Pittsburgh, with an M.E. degree, Mr. Wahr at 19 entered the Mesta company's engineering and metallurgical departments. In 1908 he was made assistant sales manager in charge of estimating. Promoted to sales manager, in 1911, he was also made assistant secretary. The following year he was elected secretary and a director, retaining the sales managership.

During the World war he handled many large governmental contracts for the company and when George Mesta died in April, 1925, he was elected vice president, succeeding Frederick E. Mesta, who then was advanced to the presidency, and whom he later that same year succeeded as president when Frederick E. Mesta also died.

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J. Dorsey Forrest, secretary to the president, Interlake Iron Corp., Chicago, died recently. He formerly was general manager and secretary, Citizens Gas Co., Indianapolis.

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Henry Lang, 66, vice president, Ingersoll-Rand Co., New York, died Nov. 10 at Montclair, N. J. He also was connected with Lang-Kidde Co., New York, a foreign trade concern, and Island Service Co., Nantucket, Mass. He was a native of Martinsburg, W. Va.

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Joseph W. Gaskill, 54, for 20 years purchasing agent for the John A. Roebling's Sons Co., Trenton, N. J., died Nov. 4, at Philadelphia. Mr. Gaskill began with the Roebling company in 1906 and became purchasing agent in 1909.

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Arthur W. Thompson, 55, former president, United Gas Improvement Co., Philadelphia, and Philadelphia Co., Pittsburgh, died Nov. 9 in the latter city. He was a director, Eastern Rolling Mills Co., Baltimore, and held directorships of the boards of several public utilities.

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George E. Purple, 66, president, Flexible Steel Lacing Co., Chicago, since its organization in 1907, died Nov. 3, at La Grange, Ill. Born at Wellington, O., he early located in Chicago and prior to 1907 occupied several positions as tool and machine designer.

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James M. Hollowell, 60, for many years vice president and general manager, Spalding Foundry Co., Atlanta, Ga., died at his home in Atlanta, Ga., Oct. 29. He formerly was treasurer of Southern Metal Trades association, Atlanta. He contributed many articles on foundry practice to technical papers.

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Charles H. Booth, 69, for many years a director, Youngstown Sheet & Tube Co., Youngstown, O., died Nov. 6 of heart disease. For many years he was vice president, United Engineering & Foundry Co., Pittsburgh, in charge of its Youngstown properties. He retired as chairman and member of that company's executive committee in 1917 and two years later retired from its board of directors. He was a director in banks and industrial enterprises and long was associated with James A. Campbell in determining Sheet & Tube company policies. At one time he was manager of Republic Rubber Co.

Harry F. Wahr

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Charles M. Eddy, 52, president R. M. Eddy Foundry Co., Chicago, died Nov. 10, from automobile fumes while adjusting the motor of his car in his garage. He had been associated with his father in the foundry business founded by his grandfather, R. M. Eddy, and for about 20 years was secretary-treasurer of the company but eight years ago became president. He was a member of Chicago Foundrymen's club and American Foundrymen's association. He formerly was secretary-treasurer, Dearborn Drug & Chemical Co., Chicago, now Dearborn Chemical Co.

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William Piez, who since September, 1928, has been stationed at Paris, as European correspondent, Link-Belt Co., Chicago, died at Brussels, Nov. 2, after a week's illness with pneumonia. From 1925 to 1928 he was Chicago district manager, Concrete Steel Co., and before that was its southern manager at Birmingham, Ala., for about ten years. At one time he was district manager at Columbus, O., for Truscon Steel Co., Youngstown, O., and also was formerly connected with American Bridge Co., and Lehigh Valley Coal Co. He is a brother of Charles Piez, chairman of the board, Link-Belt Co.

Hoover Seeks Relief Fund

(*Concluded from Page 23*)

standing that work would commence immediately upon award of sale. It is believed that this would provide employment for several hundred workers during the winter months. Bids will be opened Dec. 10.

At Pittsburgh, work for 200 unemployed men has been provided by the starting of construction of a 30-inch natural gas line for the Carnegie Natural Gas Co., subsidiary of the Carnegie Steel Co. The line will be 12,000 feet long and will require three months for its completion.

An early start is planned at Chicago on improvements authorized by voters in last week's election. Bond issues totaling $28,520,000 were approved. These provide, among other things, bridge repairs and construction for about 15 bridges and viaducts. It is stated one of the bridge projects will be under way in about 30 days.

Western railroad shops are adding to their forces. Chicago has registered 85,000 unemployed

Sheet & Tube Aids Relief

Youngstown, O. — Youngstown Sheet & Tube Co. has announced a plan to provide relief for its unemployed workers and part-time employes whereby groceries and some items of clothing are made available on credit at the company's employes stores to those who have been laid off.

This plan is to be co-ordinated by creation of an emergency fund by workers still employed amounting to one day's wages or more contributed voluntarily to be distributed for necessities by a committee of workers. Plan will be extended to all the company's plants, which ordinarily employ 12,000 workers.

Here and There in Industry

BIRDSBORO STEEL FOUNDRY & MACHINE CO., Birdsboro, Pa., has completed important additions to its plant at a cost of more than $300,000. A cleaning room 65 x 140 feet has been built of concrete and glass, housing a two-car type annealing furnace. Molding machines and sand conveyors have been installed in the main foundry buildings. A 10-ton air furnace for production of iron rolls has been added to the roll foundry. An air compressor of 125 pounds capacity has been installed to serve shop and foundry. A pattern storage building 40 x 200 feet has been added and various machine tools have been placed in the machine and erecting bays.

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Ironton Fire Brick Co., Ironton, O., has opened a district sales and service office at 1409 Fletcher Savings & Trust building, Indianapolis, in charge of Carl E. Von Luhrte.

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Vulcan Mfg. Co., Kansas City, Mo., manufacturer of electric washing machines, has consolidated its two plants into one at 2006 Wyandotte street. Sydney S. Holland is president and treasurer.

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William W. Hearne Inc., Philadelphia, merchant in manganese, manganiferous ore, chrome and bauxite, has moved its offices from the Real Estate Trust Co. building to 814 Pennsylvania building, Fifteenth and Chestnut streets.

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Bryant Heater & Mfg. Co., Cleveland, A. C. Orth secretary, manufacturer of gas heaters, has bought five acres adjoining its plant and will expand to double present capacity, giving it 200,000 square feet of factory space.

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Ames Sword Co., Springfield, Mass., is being reorganized with plans for manufacturing swords, insignia and other metal products at another plant. The company has a historic background. The first bronze statue erected in America was cast there. Thomas H. Boeshar is president.

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American Metal Products Co., Milwaukee, has changed its name to Ampco Metal Inc., and has increased capital from $400,000 to $500,000. Capital is planned to be made $1,000,000 eventually. C. J. Zaiser, president, announces a bronze rolling mill will be completed at once, to produce sheets, strip, bars, rods and wire, and that a drop forging plant will be installed soon to forge the company's bronze. A new centrifugal casting plant has been put in operation.

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Austin Co., Cleveland, has opened a Canadian branch at 1307 Canada Permanent building, 320 Bay street, Toronto, Ont., in charge of J. J. Lynch, formerly chief estimator in the Cleveland office. He has been with the Austin company for six years.

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Southern Tractor Supply Co., 406 Geer building, Durham, N. C., has been appointed exclusive representative for the sale of crawler tractor links and sprockets manufactured by the American Manganese Steel Co., Chicago Heights, Ill., in the District of Columbia, North Carolina, South Carolina, eastern Tennessee, Virginia and West Virginia.

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Scott-Weiss Steel Co., 110 South Dearborn street, Chicago, has changed its name to Scott Steel Co. W. G. Weiss, vice president and treasurer, has resigned and has formed the Midland Steel & Equipment Co., 400 South Clinton street, which has taken over the machinery department of the former company. Scott Steel Co. will handle only iron and steel products.

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General Motors Corp., Detroit, has bought the Electro-Motive Co., Cleveland, and will add the manufacture of gas-electric locomotives, motor cars and power plants to its present activities. It is planned to increase power of its units from about 800 horsepower to 1500 horsepower. The Electro-Motive company supplies most of this class of equipment to American railroads.

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General Grinder Corp., Milwaukee, recently organized to manufacture grinding equipment, has elected Van B. Hooper president. He formerly was general sales manager of the Master Lock Co., Milwaukee, and has been president of the Milwaukee Advertising club and the Sales Managers' association. Charles G. Crabb, formerly sales promotion and export manager for the Master Lock Co., has been made vice president. Louis V. Shaw, formerly works manager for the Luther Grinder Mfg. Co., Milwaukee, has been made secretary and treasurer and will be in charge of production.

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Noonan-Malmstrom Co., 1845 Carroll avenue, Chicago, jobbing machine shop, has completed purchase of the foundry plant and good will of the Monighan Foundry Co., 2135 Carroll avenue, Chicago, comprising property 75 x 125 feet, with a two and one-half story building. The foundry business will be known as the Monighan Foundry division of the Noonan-Malmstrom Co., and the new management will continue jobbing the foundry division's product of gray iron and semi-steel castings in addition to its own production of cut gears, jobbing machine work, wire and paper mill machinery, and ball bearing equipment. L. R. Noonan is president, Walter K. Malmstrom treasurer, and M. A. Malmstrom secretary.

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American Bosch Magneto Corp., Springfield, Mass., and Robert Bosch Magneto Co., New York, will be merged under the name United American Bosch Corp., subject to action of stockholders of the former Nov. 18. Assets of the latter company will be taken over in return for stock of the former. The change in name is made because of the broadening activities of the company. Officers of the United American Bosch Corp. will be: President, Arthur T. Murray; vice president and treasurer, Morris Metcalf; vice presidents, Louis Beeh, G. J. Lang, Leon W. Rosenthal, Hermann Waker, J. E. Wild; secretary and assistant treasurer, R. W. Washburn. General offices will remain at Springfield, Mass., and branches will be maintained at New York, Chicago, Detroit and San Francisco.

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Cornell & Underhill, distributors of wrought pipe, fittings and valves and fabricators of steel pipe and fittings, have leased for 20 years a building to be erected at Hoboken, N. J., on a 200 x 400 foot plot at Thirteenth to Fourteenth and Jefferson to Madison streets. The plant will have a railroad siding and be modernly equipped.

The firm of Cornell & Underhill was founded in 1889 at 13 Gold street, New York, by Charles G. Cornell Jr., who still heads the business. In 1900 the firm removed to Beach and Hudson streets, New York, and in 1910 to Spring and Greenwich streets, with storage yards at Houston and West streets, New York. Cornell & Underhill for 35 years have been distributors in New York for Spang, Chalfant & Co. Inc., Pittsburgh, maker of pipe and for 25 years for the Pittsburgh Valve & Fittings Co. Cornell & Underhill expect to have their new plant in full operation by next spring, but will maintain offices in New York.

EDITORIAL

Can European Entente Outwit Supply and Demand?

SUCCESSFUL evasion or overriding of the economic law of supply and demand again seems about to be defeated, this time in the case of the European steel entente. As Brazil failed in coffee, Great Britain in rubber and the United States farm board in wheat, so European producers of steel and iron have failed to create an artificial control of their products by organization.

A number of interesting factors have entered into the four years' history of this organization, conceived in an effort to stabilize the industry and bring order from a chaotic state. At its inception, much preliminary work had been done to lay a foundation of cartels, to the end that central control would be simplified; government sanction was not difficult. All member countries were experiencing the same difficulties and their aims were identical. Markets were good and the plan of the entente was well-designed and carefully balanced by counter checks devised to insure fairness.

Four years have brought great changes in the economic situation and instead of sufficient tonnage to afford good order books at agreed prices, demand has declined until total requirements will suffice for only a portion of steelmaking capacity in entente countries. With development of this condition, the usual devices for evasion have been resorted to.

The result has been weakening of the entente position, and to retain its organization and existence it has let slip one after another its various controls until it is a mere shadow of its former powerful self. At the moment it has been kept alive to the end of the year by a truce, in the hope a new way will be found to outwit circumstances and give control of output and prices.

Highly Divergent Results Follow Opposite Obsolescence Treatment

Human nature, economic cycles and a fundamental difference in mental makeup between France and the other entente countries have conspired to defeat the object of the agreement. Slack business and reduced demand for tonnage first brought difficulty. This was met to some degree by reduction in quotas to match production to diminished buying. This was a burden on all producers but was borne for a time. Demand fell below the reduced quotas and price cutting was resorted to in various ways.

At this point a divergence appeared. France continued to have a prosperous domestic demand and was able to export at profitable prices, while Germany and Belgium found home buying at a low point and export difficult. This difference in position grew out of the diametrically-opposed policies of industrialists in these countries. German and Belgian producers adhered to the theory of "rationalization," the retirement of old and inefficient plant and replacement by modern equipment that would produce at lower cost. France, always frugal, built anew only where destruction made it necessary as a postwar expense and continued to operate its old plant, with such additions as were absolutely required.

The result has been unexpected. German and Belgian steelmakers are burdened with debt while French producers have little. They escape the charges for new capital. France has not had an unemployment problem and has imported labor from other countries to carry on production and building. Wages have been maintained and in some cases real wages are much above prewar.

Common Ground Difficult and Crucial Era Is at Hand; Ingenuity Will Be Taxed

These diverse situations have made a difficult path for the entente. What is good for France is not suited to Germany and vice versa. But the spirit of fair play is evident and the present truce is based on forbearance, a compromise to give time to revamp the entente.

France is assured cessation of dumping of German and Belgian steel at cut prices and assumes the burden of a penalty of $4 per ton on all steel she produces over her quota. This is estimated at about $200,000 per month. This will add about 10 francs per ton to the cost of production of steel in France and application of Germany's share of this penalty, which is in the form of a bonus of $2 per ton for underproduction, would lower her steel costs about 8 francs.

The crucial period for European steel seems at hand. It remains to be seen whether human ingenuity can devise rules to control in the face of adversity in market demand or whether supply and demand will continue dominant.

Incidentally, an interesting idea is offered for the study of those advocating or opposing the theory of obsolescence and replacement of older tools by more efficient means.

Present Tendencies in Industry Point To New Vista of Opportunity for Steel

GLIMPSES of what the next decade has in store for 12 important American industries were afforded those who attended the fall conference of the Associated Business Papers Inc. and the National Conference of Business Editors at the Commodore hotel, New York, last week. In a forum on business conditions, at which Magnus W. Alexander, president of the National Industrial Conference Board, presided, 12 editors outlined briefly the important changes now taking place in their respective industries.

In each of the dozen industries, the tendency is toward developments in which steel—as a material or as a part of mechanical equipment—will play an important role.

The following represents in substance the remarks of a few of the editors who participated in the forum. Briefs of other industries will be presented in a later issue.—THE EDITORS.

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Opportunities for Greater Use of Electricity Are Unparalleled

Prospects in the public utility field for the consumption of electricity are infinitely brighter in 1930 than they were in 1920. More opportunities are in sight than ever before. Among the developments in the offing, which may be expected to come to fruition within the decade are improved electrical communication, of which the interconnected typewriter is an example; improvement in the two-fluid cycle idea of power generation; application of the electronic tube; volume production of power transmission devices, which will mean sharp reductions in cost; surprising developments in gaseous lamps; and television. The next decade will witness greater progress than has been made in any 10-year period in the brief history of electricity.

—L. W. MORROW,
Electrical World

Automobile Industry Is Moving Toward Era of Stabilization

In surveying the probable future developments in the automobile industry, five distinct tendencies are apparent: Cost of production, rather than having been pared to an irreducible minimum as intimated at various times, in the future will be carried to lower levels. Engineering developments, particularly in the field of machine design, will continue at accelerated pace. Improvements in the marketing and distribution of motor cars will be sweeping and perhaps revolutionary. Dealers of a new type, who will operate on an expectation of reasonable profit and with a sane understanding of overhead, etc., will supplant those who have labored under extravagant ideas of what should be taken out of the business. And finally, every department of the automobile industry will gradually enter a period of stabilization in which production, distribution and dealer relations will be under better control.

—NORMAN SHIDLE,
Automotive Industries

Co-ordination Will Enable Railroads To Cut Transportation Rates

The principal problem before the railroads is to eliminate wasteful competition in transportation. One step that will be necessary before this objective can be attained is the passage of legislation permitting the proper co-ordination of transportation facilities. When this co-ordination becomes possible, the railroads will be able by utilizing the best features of railway, motor truck, interurban, water and air transportation to furnish house-to-house or plant-to-store door service which will reduce the present unduly high costs.

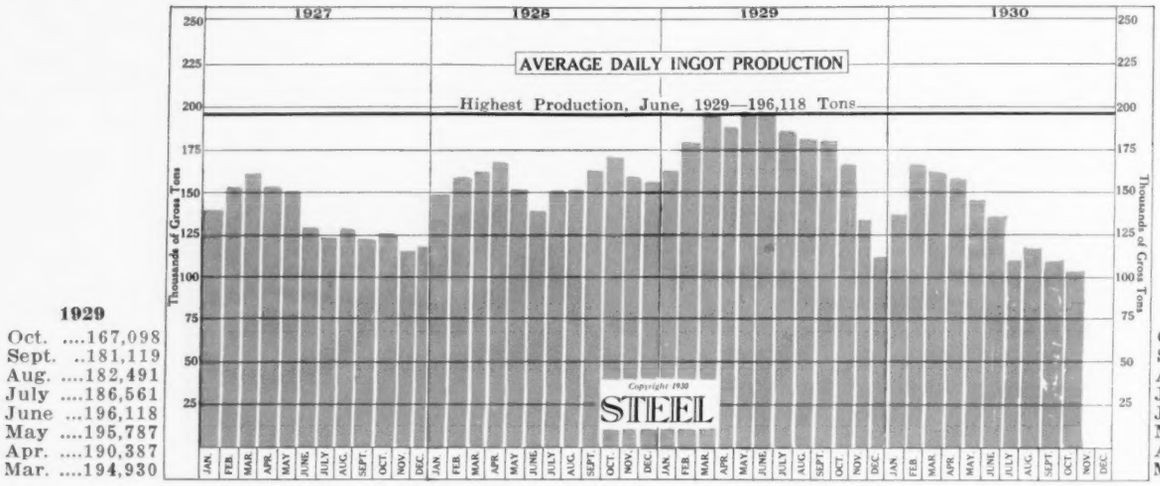
—ROY WRIGHT,
Railway Age

New Ideas of Distribution Are Revamping Food Industries

A new era in food distribution is in the making. New applications of refrigeration and of preservation of perishables will permit the food industries to reduce much of the waste which now occurs in the distribution of many foodstuffs. This also will tend to discourage speculation in food products. Methods of distribution already are changing rapidly. Grocery stores, meat markets, etc., will give way to "food stores" in which new ideas of packaging will find expression to a degree not now anticipated by the public. These tendencies mean that radical changes will take place not only in the preparation and preserving of food, but also in handling it from producer to consumer. This will involve new machinery—particularly for refrigerating, packaging and material handling—and increased material for food containers.

—PAUL I. ALDRICH,
The National Provisioner

THE BUSINESS TREND



1929	
Oct.	167,098
Sept.	181,119
Aug.	182,491
July	186,561
June	196,118
May	195,787
Apr.	190,387
Mar.	194,930

1930	
Oct.	100,756
Sept.	110,307
Aug.	119,050
July	112,823
June	137,610
May	149,066
Apr.	159,764
Mar.	165,381

American Business Still Is Dragging Bottom

STATISTICS of steel ingot and pig iron production for October, which became available during the past week, show that the already long decline has not been stopped. In the case of steel ingots, the downward course of average daily output now has continued one month longer than it did in 1921 at the time of the postwar deflation.

With pig iron output down to the lowest rate since September, 1924, and with the number of active stacks reduced to the smallest number since October, 1921, it was not surprising that the record of steel ingot output was equally disappointing.

The daily rate of steel ingot production in October was 100,756 tons, while the total for the month was 2,720,414 tons, the lowest in six years. This represents operations averaging only about 50 per cent of capacity. Weekly approximations thus far in November of operations below 50 per cent threaten a further decline in ingot output in the eleventh month unless something occurs to swell production in the next three weeks.

Car Loadings Hold Up Well in Month of October

Weekly car loadings of revenue freight, while continuing far below 1929 levels, offer some encouragement because of the tenacious manner in which the volume held its ground in October. A moderate gain in car loadings in the week ending Oct. 25 marks that month as the best of the year. This is pleasing in view of the fact that in the third week of October last year, loadings started on a long downward drift.

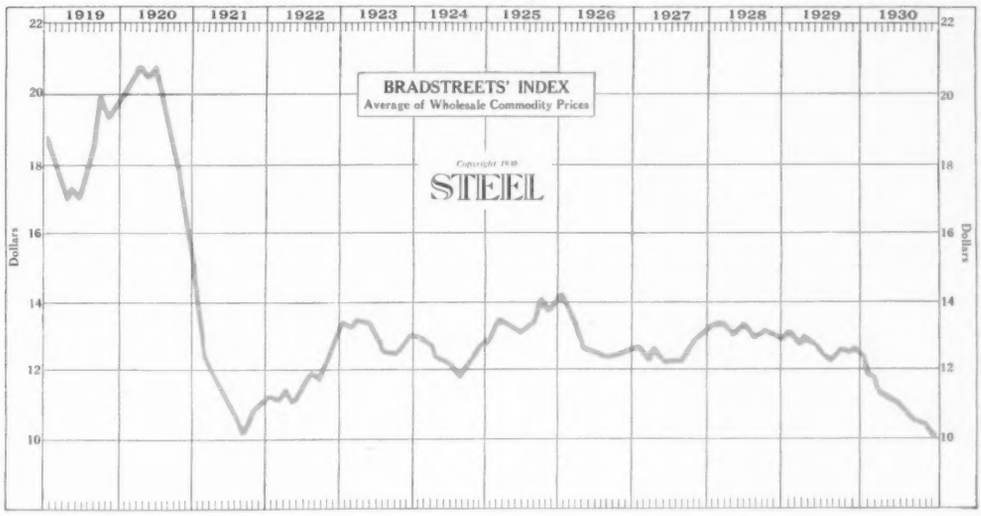
From now on, comparisons of current month activities with those of the corresponding month a year ago will be more favorable in their effect on business sentiment. Until recently, these contrasts have been discouraging because 1930 figures were weighed against those of 1929 months in which many all-time records were established. November and December of 1929, however, were not exceptionally good months, and therefore comparisons with them will be less objectionable.

As a matter of fact, the statistical picture never is exact. The average number of tons of revenue freight per car is larger today than it was several years ago, yet no correction factor is used in comparing today's freight car loadings with those of the past. This is true of many other barometers.

Uncertain Movement of Commodity Prices Is Key Factor

Commodity prices, which continue as the key to the present business situation, have not changed appreciably during the past few weeks. Economists still are waiting for a drop in retail prices, which they say must come before wholesale commodity prices can turn upward.

STEEL's market composite of 14 steel and iron prices has fallen 8 cents to $31.98, as of Nov. 5. This is the first time in many years that it has fallen below $32. The composite has declined 3 per cent in 60 days and now is 11 per cent below its position a year ago. The various wholesale commodity price indices are continuing to move irregularly within narrow limits at a low level.



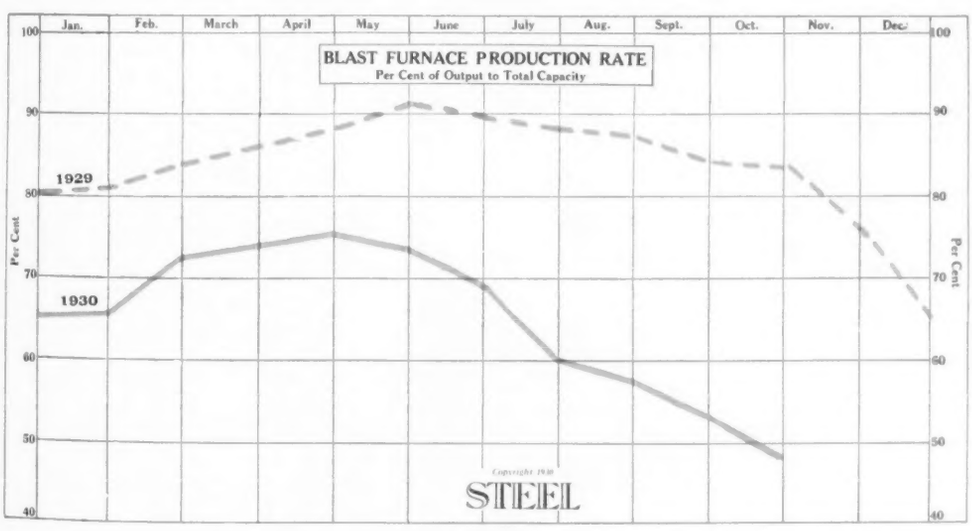
	1930	1929
Nov. 1	$10.06	$12.40
Oct. 1	10.30	13.70
Sept. 1	10.43	12.67
Aug. 1	10.45	12.63
July 1	10.56	12.49
June 1	10.77	12.46

Commodity Price Index Follows Gradual Downward Trend

Bradstreet's index of commodity prices for Nov. 1 stood at $10.06, indicating a decline from $10.30 for Oct. 1, $10.43 for Sept. 1 and $10.45 for Aug. 1. From an index of $12.70 on Oct. 1 last year, the figure has retrogressed gradually each month on an average of 2.3 per cent, until at the present time it is the lowest since October, 1915. The most recent general trend downward started in February of 1928, when the index was $13.53, and may be considered a part of a long-time cycle. Wholesale prices are now 23.6 per cent lower than a year ago and 51.8 per cent below the last high peak of the present cycle, in February, 1920.

October Blast Furnace Rate Repeats Reduction of Operation Percentage

Blast furnaces produced during October 49.6 per cent of the pig iron of which they were capable, according to their capacity rating of 51,490,790 tons, made by the American Iron and Steel institute. This rate of activity compared with 53.8 per cent in September and 57.8 per cent in August, and is the sixth successive month registering a decline since April, when production was at 75.4 per cent. Blast furnaces in operation at the end of the month were 111, compared with 126 on Sept. 30 and 137 on Aug. 31. One year ago blast furnace production was at 82.6 per cent of a capacity then placed at 51,069,895 tons.



Per Cent	1930	1929
Oct.	49.6	82.6
Sept.	53.8	83.3
Aug.	57.8	86.4
July	60.3	87.2
June	69.3	88.5
May	74.2	89.8
Apr.	75.4	87.4

Connect *your* distant Offices by Telephone Typewriter Service

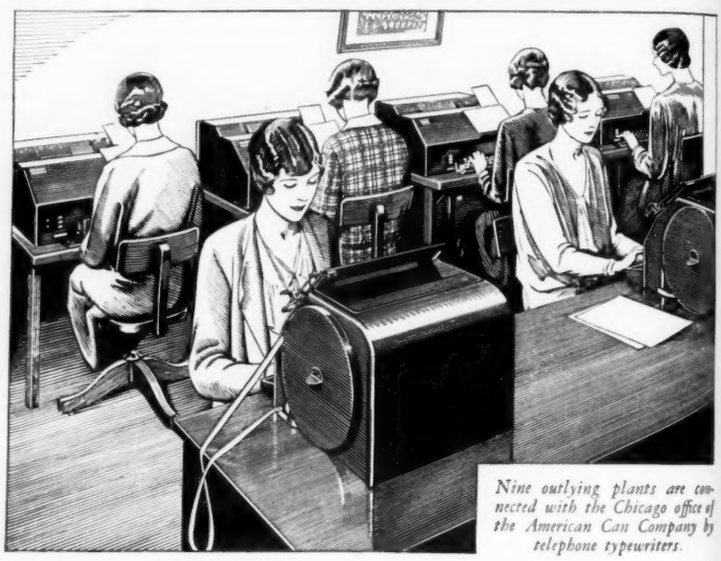
TELEPHONE TYPEWRITER SERVICE speeds business and cuts operating costs. It transmits typewritten messages instantly between the separated divisions of an organization. It is quick, accurate and handles an unlimited flow of incoming and outgoing messages in a single business day. Orders are reproduced identically on duplicate printed forms. Inquiries are answered from a distant city the minute they arise. Routine is simplified and expensive duplication of operations eliminated.

A textile company has headquarters in Boston, sales offices in New York, a manufacturing plant at Biddeford, Maine, and a bleachery at Lewiston, Maine. Telephone Typewriter Service ties together the operation of all these units. An official writes: "Many transactions can be cleaned up on the same day that they arise, even if they concern several offices. A saving of 48 hours or more in the handling of orders is frequently effected."

A public service corporation uses Telephone Typewriter Service to connect its offices in three cities. General information and executive messages are exchanged.

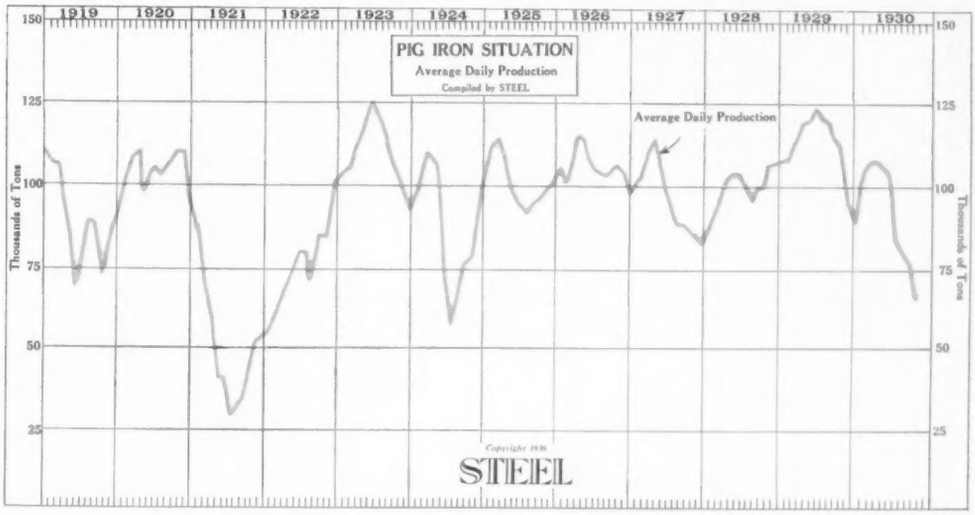
Your local Bell Telephone Business Office will gladly show you how this modern business aid can be of value to your company.

The New York office of the International Nickel Co., maintains constant contact with factories at Huntington, W Va.



Nine outlying plants are connected with the Chicago office of the American Can Company by telephone typewriters.

The Kelly-Springfield Tire Company uses telephone typewriter service between New York and Cumberland, Md.



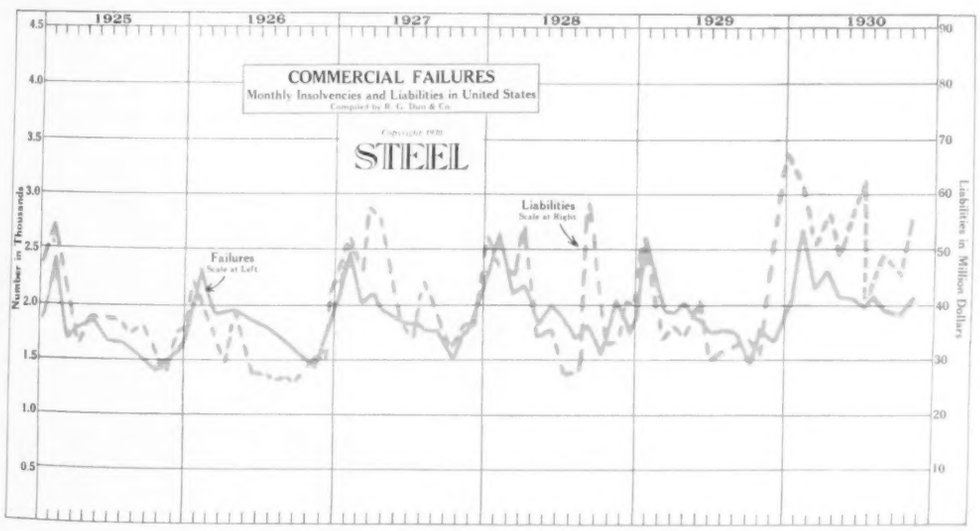
	1930	1929
Oct.	69,851	115,747
Sept.	75,893	116,548
Aug.	81,455	120,845
July	85,110	122,016
June	97,817	123,837
May	104,564	125,753
Apr.	106,371	122,106

Pig Iron Production During October Unable to Accomplish Recovery

Production of coke pig iron during October, according to the monthly report of STEEL, was unable to halt the decline in daily output. After reaching 75,893 tons per day in September, a new low for the year was registered when the average went to 69,851 tons. September, 1924, with 68,454 tons, was the last month in which the daily production was lower. During October there was a net loss of 15 furnaces blown out or banked, compared with a net loss of 11 in September. The October rate was 8.2 per cent under that of the previous month and 39.6 per cent under that of October, 1929. Of 310 furnaces available, 111 were in operation on Oct. 31.

Commercial Failures Mount, But Less Than Usual Seasonal Gain

Both in numbers and in the amount of liabilities, commercial failures during October, as reported through R. G. Dun & Co., increased noticeably. A total of 2124 failures during the month compared with 1963 in September, and was over 16 per cent above the number in October last year. Liabilities were $56,296,577, or 22 per cent higher than last month, and 80 per cent higher than October, 1929. Considering the usual seasonal trend in the number of failures, however, the increase in October over September shows a favorable direction. In 1928, October showed an increase over September of 24 per cent. In 1929 the increase was 16 per cent, and this year 8 per cent.



Liabilities

Oct., 1930	$56,296,577
Sept., 1930	46,947,021
Oct., 1929	31,313,581

Number

Oct., 1930	2,124
Sept., 1930	1,963
Oct., 1929	1,882

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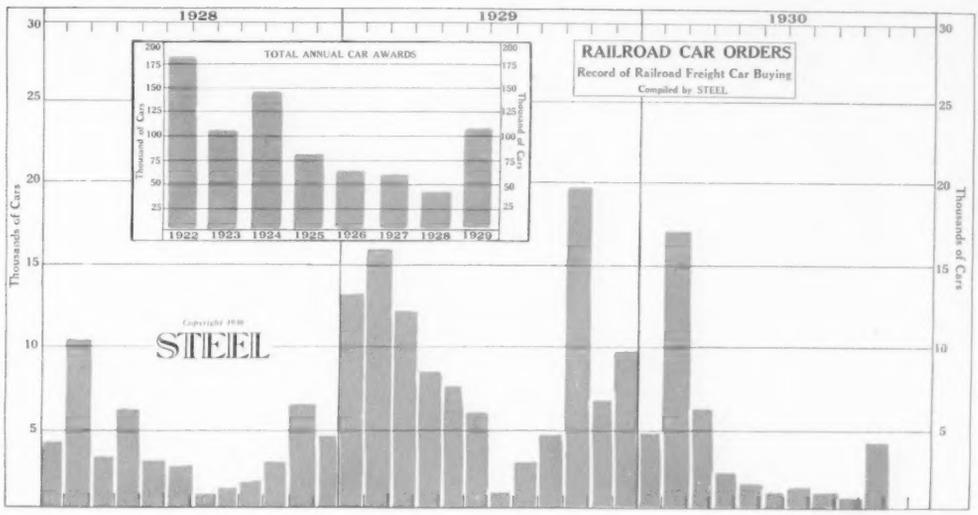


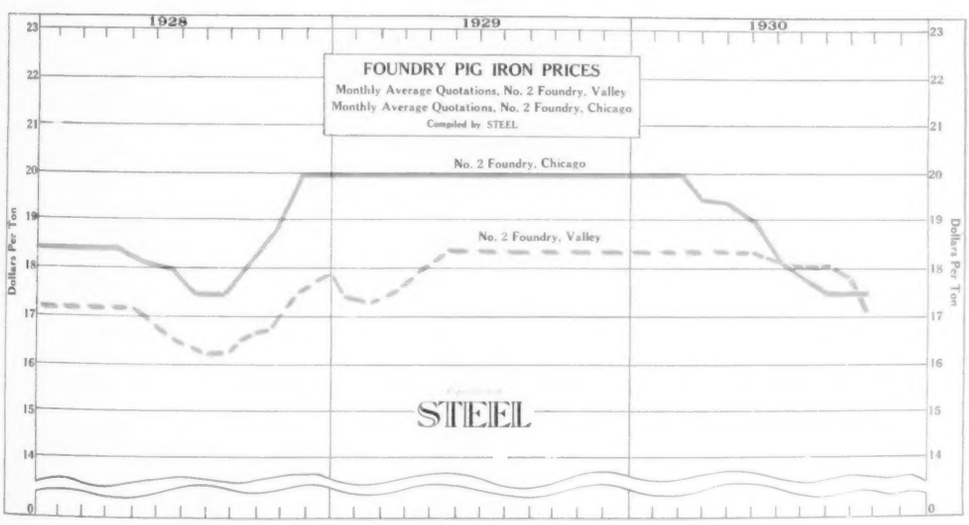
	1930	1929
October	4,075	19,506
September	535	4,517
August	1,070	2,854
July	1,348	341
June	998	5,886
May	1,392	7,562
Apr.	1,997	8,205
Mar.	6,118	12,023

Freight Car Bookings Rally in October to Highest Point Since March

An encouraging move was made in the placement of orders for domestic freight cars during October, and the 4075 cars awarded marked the highest figure since last March. This figure compares with an unusually low total of 535 cars in September, 1930, and an unusually high total of 19,506 cars in October last year. Awards to date in 1930 now stand at 39,632 cars, only 44 per cent of the awards made in ten months of last year, but 6485 cars more than the awards for ten months of 1928. It appears that October has made a start on the last-quarter uptrend that is common to the final periods of past years, and that it has ended the seasonal slack period of the second and third quarters.

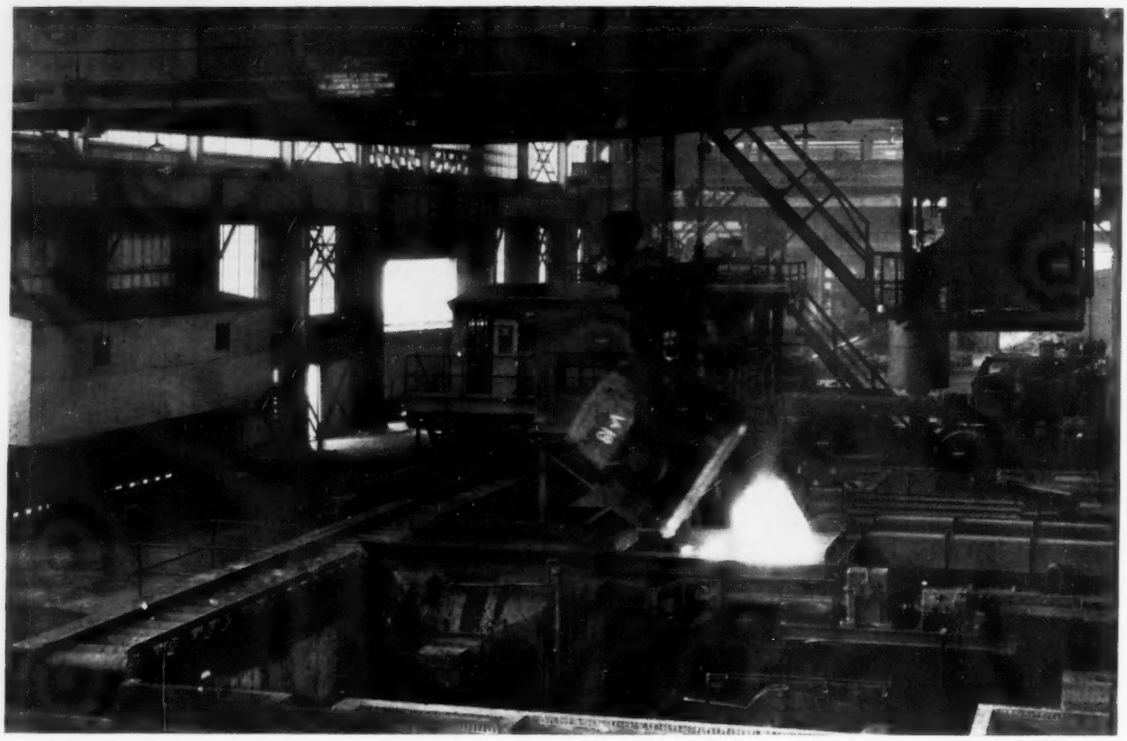
Foundry Pig Iron Prices Assume More Normal Positions

The price of No. 2 foundry pig iron, valley furnace, continued its decline during October, finding the level of $17.20 as a monthly average. No. 2 foundry, Chicago furnace, for the third consecutive month held at $17.50, placing valley quotations under those at Chicago for the first time since June, when both were at $18.37. The quotations at Chicago furnaces, after maintaining a price plateau at $20 throughout 1929 and the early months of 1930, began their decline in March, to be followed tardily in June by prices at valley furnaces. Provided that prices at Chicago continue their firmness, further adjustments in valley prices will be necessary to restore a normal relationship.



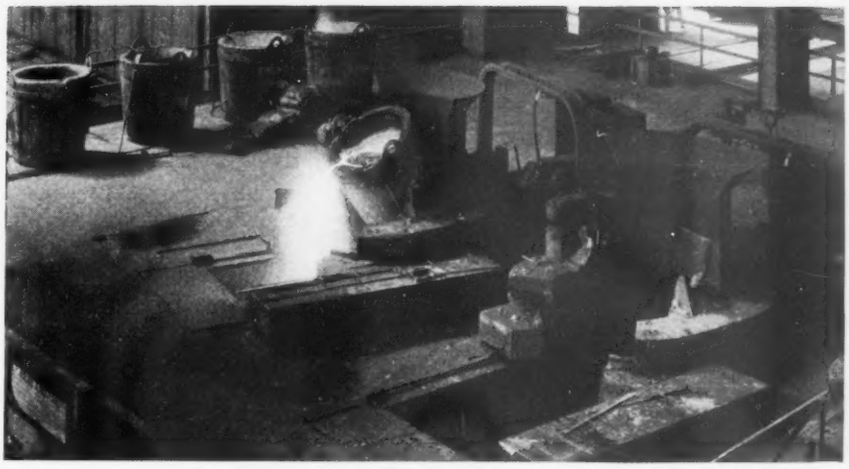
Monthly Averages

		No. 2 Foundry Chicago	No. 2 Foundry Valley
Oct.,	1930....	$17.50	$17.20
Sept.,	1930....	17.50	17.87
Aug.,	1930....	17.50	18.00
July,	1930....	17.90	18.00
June,	1930....	18.37	18.37
May,	1930....	19.00	18.50



HANDIWORK OF THE METALLURGIST

SPONGY mass of wrought iron being received by a 900-ton electrically-driven press which, with its powerful jaws, compacts the metal into an ingot, 18 x 24 inches in cross section and 6 feet long, ready to run the gamut of finishing mill rolls and be transformed into a myriad of useful products.



Processing platform where refined iron at about 2750 degrees Fahr. is poured into cups containing slag at about 2400 degrees Fahr.

Rapid liberation of gases causes the hollow globules of iron to burst and form spongy particles at the bottom of the processing cup

Processing 3-Ton Wrought-Iron Balls — A New Departure —

BY J. D. KNOX
Associate Editor, STEEL

WROUGHT-IRON manufacture long has exacted the expenditure of human labor. Manipulation of bars and rabbles by the old-time puddler in working his five heats a turn into sponge-like balls, and, transferring these balls weighing 200 to 300 pounds each to the rotary squeezer, always has been executed by hand. The industry promised little reward to the engineer who would display his ingenuity in devising mechanical handling equipment. Moreover, men of the younger generation about to learn a trade, turned their backs on the industry upon learning of the arduous duties which had to be enacted in melting down, clearing, boiling and balling these heats. Mill gates no longer were needed to bar the entrance of laborers looking for a job. Meanwhile, the inauguration of the bessemer process of steelmaking in this country started industrial America to think in terms of tonnage; later the application of the open-hearth furnace to the manufacture of steel intensified the movement in this direction. Costs of steelmaking declined; output of steel mills increased. In the wrought-iron industry, costs of production were high; output depended upon the strength and brawn of the human element. Hampered by low output, high labor charges and shortage of labor makers of wrought iron faced a real economic problem in marketing their products on a profitable basis. As a result of research work conducted by Dr. James Aston at the south side plant of the A. M. Byers Co., Pittsburgh, a new process of producing wrought iron in large tonnages and by mechanical equipment was developed. Experimental methods were applied to large scale production at a plant in Warren, and these operations were described in the Feb. 7, 1929, issue of IRON TRADE REVIEW, predecessor of STEEL. So successful were the results obtained at this experimental plant from the standpoint of economy, tonnage and quality

Bessemer iron melted in three cupolas and desulphurized by the addition of 20 to 25 pounds of fused soda ash per ladle, is refined in 10-ton heats in bessemer converters

Makers of Principal Equipment

Slag melting furnaces	Smythe Engineering Co., Pittsburgh
Cupolas, converters, processing machines and ladles	Pennsylvania Engineering Works, New Castle, Pa.
Slag furnace charging machine and gas producers	Wellman Engineering Co., Cleveland
Sponge press and skelp mill hot bed	Birdsboro Foundry & Machine Co., Birdsboro, Pa.
Blooming mill; skelp mill, tables and shears; 9-inch mill reels and shears	United Engineering & Foundry Co., Pittsburgh
Universal plate mill	Morgan Engineering Co., Alliance, O.
9-inch merchant mill	Lewis Foundry & Machine Co., Pittsburgh
Hot bed for 9-inch mill	Treadwell Engineering Co., Easton, Pa.
Reheating furnaces	Swindell-Dressler Corp., Pittsburgh
Reheating furnace chargers and 22 cranes	Alliance Machine Co., Alliance, O.
Annealing furnace	Costello Engineering Co., Pittsburgh
Cupola blowers, main mill motors and control	General Electric Co., Schenectady, N. Y.
Press electrical equipment, auxiliary mill motors and control	Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Crane motors	Crocker Wheeler Mfg. Co., Ampere, N. J.
Converter blowers	Ingersoll-Rand Co., New York
Boilers	Combustion Engineering Corp., New York
Coal and ash handling equipment	R. H. Beaumont & Co., Philadelphia
Electric brakes, master switches	Cutler Hammer Inc., Milwaukee
Structural steel for buildings	Fort Pitt Bridge Co., Pittsburgh
Foundations	H. E. Culbertson Co., Cleveland
Piling	Simplex Pile Foundation Corp. and Pihl & Miller Inc., Pittsburgh
Pump house	Dravo Contracting Co., Pittsburgh
Engineering and supervision	H. A. Brassert & Co., Chicago

of output, that directors of the Byers company authorized the construction of a plant in accordance with the Aston patents. Ground was broken in February, 1929, on a 126-acre site located 20 miles north of Pittsburgh, between the Ohio river and the old Lincoln highway, the present plant being equipped to manufacture and roll 500,000 tons per year of wrought iron into blooms, slabs, billets, bars, skelp and universal plates. Space is available to accommodate later blast furnaces, by-product coke ovens and additional finishing mills.

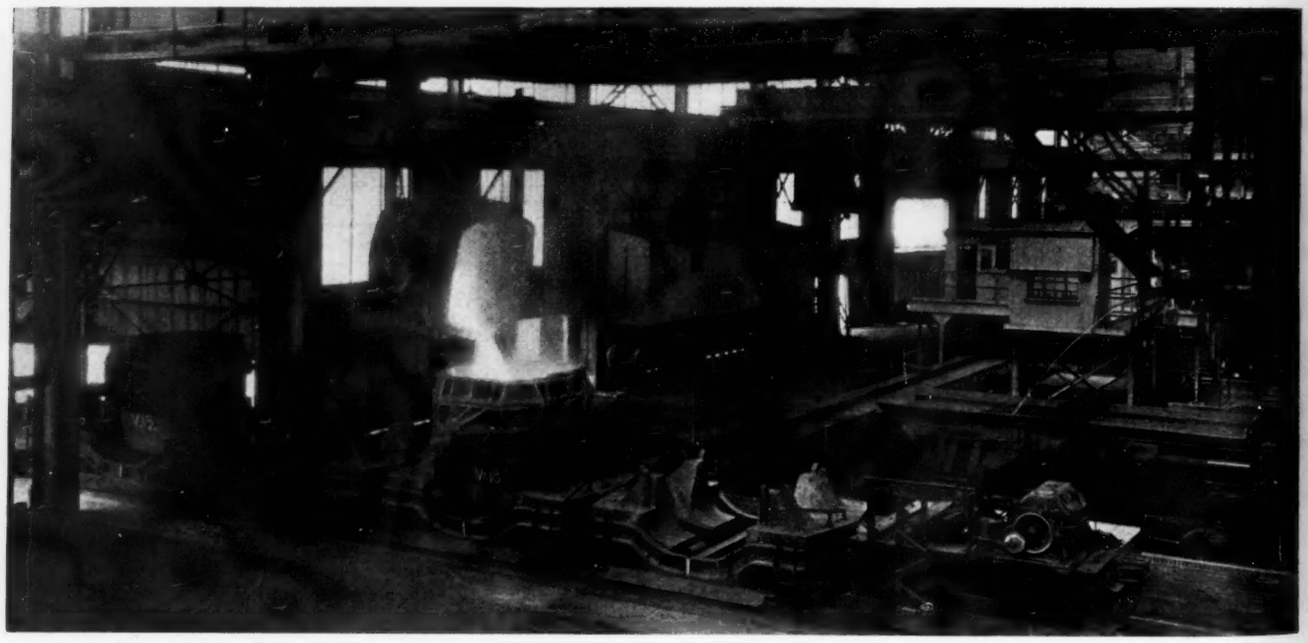
Five correlated phases are involved in making wrought iron by the Byers process, namely, securing refined iron, a supply of slag in the molten condition, incorporating the proper quantity of base metals and molten slag, decanting the excess slag and pressing the ball of wrought iron into a bloom. Each operation is executed in separate equipment.

Pure iron is obtained by melting bessemer pig iron in a cupola and refining it in the bessemer converter. At present bessemer pig iron is purchased in the open market but at some future time it is the intention of the company to build by-product coke ovens and a blast furnace to avoid remelting cold iron for the converters. From 15 to 20 tons of molten iron an hour is obtained from each of three cupolas, the iron picking up from 0.05 to 0.06 per cent sulphur from the coke during the melting process. Since the bessemer process of refining does not lend itself to the elimination of sulphur, each ladle of cupola metal is treated, while being tapped, with 20 to 25 pounds of fused soda ash, which reduces the sulphur to the percentage desired. The ladle, mounted on a transfer car, is moved outside the cupola building and the slag, resulting from the soda ash addition, skimmed off. The ladle then is transferred to the refining department and the metal charged into either one of two 10-ton bessemer converters.

Metalloids Are Oxidized

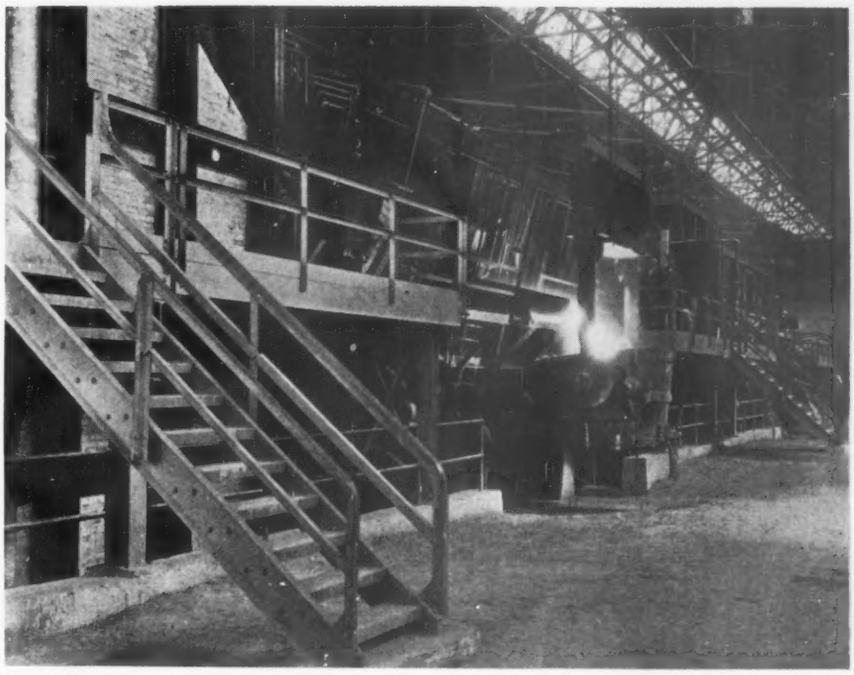
During the refining stage, which requires about 10 minutes, a blast of air at 20 pounds pressure is blown through the metal and oxidizes the carbon, manganese and silicon. At the end of the blow the contents of the converter are poured into another transfer ladle located at ground level and taken to the processing station housed in a separate building. Here the ladle is hoisted by crane and the practically pure iron poured into a processing ladle mounted on a specially-designed car. A battery of four cars and ladles installed on a platform are available for performing the processing operation.

In the arcade beneath the processing station is a section of standard-



Decanting surplus slag from the processing cup exposes a solidified sponge-like ball of wrought iron intermingled with slag and weighing about 3 tons

gage circular railroad track over which a train of cars, each carrying a cup of molten slag, is operated by an electric locomotive. The molten slag is made in two 40-ton melting furnaces of the open-hearth tilting type by fusing sand, ore and roll scale in predetermined proportions to form a siliceous iron slag of a definite composition. The furnaces, built with hearths 12 feet wide and 32 feet long, are fired with natural gas but provision is made to fire them with producer gas or a mixture of coke oven and blast furnace gas if occasion demands. The melted slag is tapped into unlined rectangular cups 6 feet square and 6 feet deep.



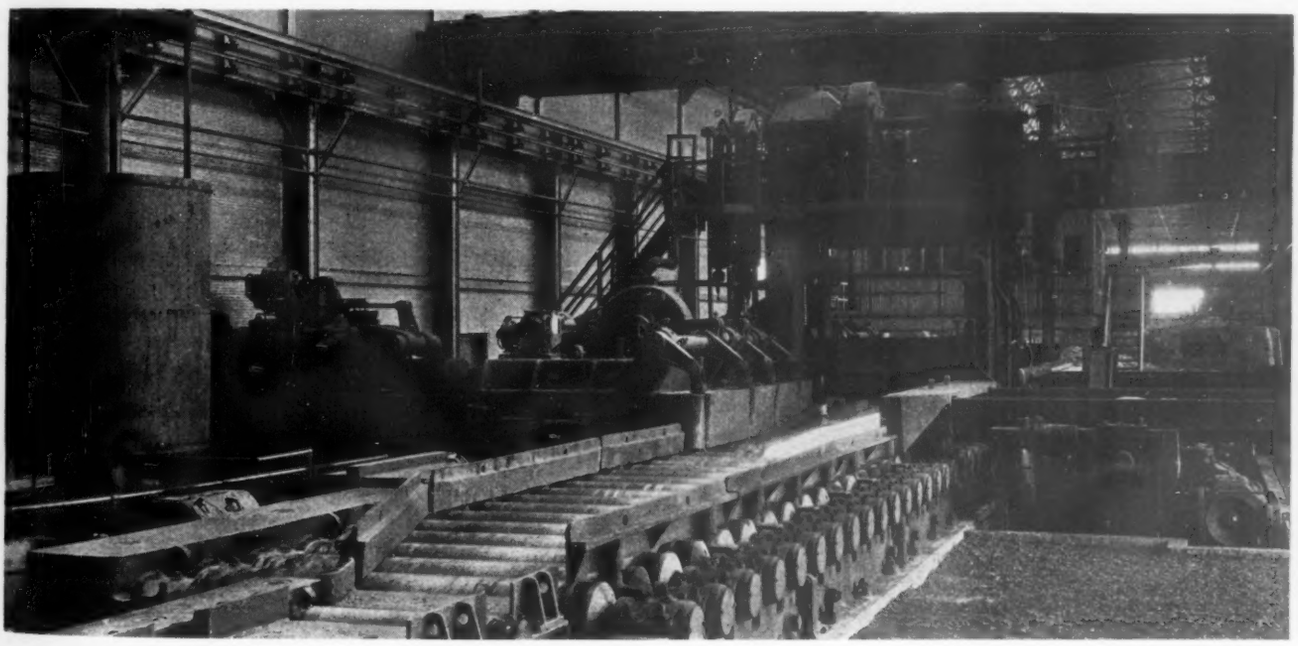
Slag being tapped from one of the tilting slag-melting furnaces into a processing cup to a depth of about 4 feet

How Cup Is Handled

When the cup has been supplied with a slag to a depth of about 4 feet it is returned to its car which is coupled in train to other cars on the circular track previously mentioned. The electric locomotive then shifts the train to the arcade at the processing station bringing the cars to rest with the slag cups spotted beneath the respective processing machines. Each of the processing cars operate on a circular track and impart an oscillating motion to the ladle of refined iron as it is actuated forward and backwards during the pouring operation, thus assuring a uniform distribution of metal in the ladle of slag. Approximately 3 minutes is required to pour 3 tons of purified metal into the processing cup, the rate of pouring being controlled automatically.

After pouring begins the slag commences to boil and swell, gas burns at its surface and the metal forms in a spongy mass at the bottom of the thimble. The reaction is not difficult to understand. Dissolved in the molten metal is 15 to 20 times its volume of gas, mostly hydrogen and carbon monoxide. The solubility for the same metal for the same gases practically is zero when the metal is in a solidified state. If the metal is chilled, therefore, to the point of solidification, gas is eliminated. In other words, if the metal is poured into an agent whose temperature is lower, the gas is liberated as fast as the metal is chilled; and, if the rate of cooling is rapid, the metal shatters into pellets. This is the reaction that occurs in the slag cup. The slag at a temperature of about 2400 degrees. Fahr. has a chilling effect on the purified metal which is poured at a temperature of 2700 to 2800 degrees Fahr. The rapid liberation of the gases causes the metal to shatter into grape-like particles, the slag running through the interstices and becoming incorporated with the metal.

When approximately 3 tons of the purified iron has been processed into each slag cup the entire train is moved over the circular track to a 900-ton press located at the side of the roller table leading to the bloom-



Delivery side of the 40-inch reversing blooming mill which converts wrought-iron ingots into billets and slabs for the plate, skelp and merchant mills

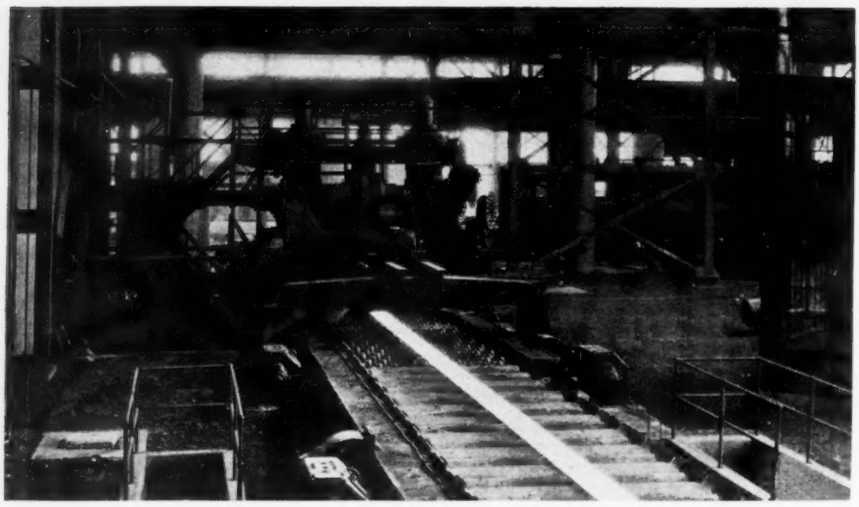
ing mill. Here the cups are lifted by crane, one at a time, and the surplus slag decanted into an empty ladle. The train then moves around to the open-hearth station, takes on additional slag and continues on to the processing station again to begin another cycle.

Ingot Pressed to Form

Meanwhile, the ball of wrought iron, remaining in the decanted ladle, is dumped on the receiving table of the sponge press. An electrically-driven pusher transfers the sponge onto the lifting plateau which lowers it to the bottom of the squeezing chamber. The rear wall of the chamber is moved forward by the main ram which is driven by a 1200-horsepower motor and carried by two double face racks and eight steel pinions. The sponge is squeezed into a two-sided section, turned by manipulating fingers and the same force applied again. This operation is repeated until the metal is squeezed into a rectangular ingot of about 18 x 24 inches and the excess slag ejected. Two other rams then advance from either end, exert a pressure of 100 tons and compact the ingot to a length of about 6 feet. The lifting platform, which forms the bottom of the press, then elevates the ingot to the level of the receiving table where the pusher moves it onto the approach table of the blooming mill. The capacity of the press is a bloom every 2 minutes or approximately 1800 tons a day.

The blooming mill for breaking down the compacted ingot is a 40-inch 2-high reversing unit and is driven by a 5000-horsepower motor. So far as known this mill is the first blooming unit to be used for the conversion of a wrought-iron ingot into slabs, blooms and billets, since the manufacturer of wrought iron began a century and a half ago. After the ingot has been given the desired number of passes, the resultant billets or slabs pass to an electrically-driven shear located in the storage building, 100 x 429 feet, where they are cut into suitable lengths and piled to apply against mill schedules.

Adjoining the storage building is the reheating furnace building, 382 x 100 feet, which houses five furnaces of the regenerative type, each with a hearth 12 x 30 feet. The furnaces are fired with producer gas generated in producers of 10 foot diameter. Slabs to be converted into plates are reheated in two of the furnaces, handling being accomplished by two electric charging and drawing machines of the overhead type. The universal plate mill is driven by a 4000-horsepower motor and is designed to roll skelp for the manufacture of pipe, forging blooms or billets, sheared plate from 12 to 84 inches wide and universal plate up to 46 inches wide.



Delivery side of the 46-inch universal plate mill which is designed to roll skelp, forging billets and blooms and universal plate

Plates to be annealed immediately after rolling pass to an 8 x 30-foot furnace located parallel to the run-out table. Following heat treatment the annealed plates pass through flattening rolls and then onto an Aiken-type hot bed, 60 x 66 feet, which delivers them to the finishing end of the mill where rotary, scrap and squaring shears and a large castor bed are installed.

Paralleling the plate mill building is another structure which houses a 20, 18 and 16-inch skelp mill consisting of two 20-inch and three 18-inch 2-high continuous roughing stands and one 18-inch and three 16-inch stands arranged for cross-country rolling. A 3000-horsepower motor drives the five roughing stands and the first cross-country stand, a 2000-horsepower motor the next two cross-country stands and a 1500-horsepower motor the finishing stand. Vertical edging mills are provided to give the first, third, fifth, eighth and eleventh passes which roll the sides of the plate, thus obviating the necessity of side shearing. Skelp from the runout table of the finishing stand is received by a 160-foot hot bed of the walking-beam type which is provided with bars for carrying flat rolled material. When the mill is scheduled on rounds or shapes the flat carrying bars are replaced by notched bars by operating a lever.

Adjacent to the skelp mill and in a separate building is a 14 and 9-inch merchant mill for rolling rounds, flats, squares and other merchant sections. Billets to be rolled on this mill are reheated in two furnaces similar in design to those serving the universal plate and skelp mills. The heated billets are roughed down on a stand of 14-inch 3-high rolls driven by an 800-horsepower motor. Intermediate passes are given by four 9-inch 3-high stands driven by a 1200-horsepower motor and the finishing pass by a 9-inch 2-high stand driven by an 800-horsepower motor. Small rounds to be shipped in bundled lengths pass from the finishing mill through a flying shear to a 110-foot hot bed of the double-escapement type, thence through vertical shears at either side and finally to bundling tables. If shipping instructions call for rounds in coil form the product leaving the finishing mill passes to two reels and thence to the shipping department.

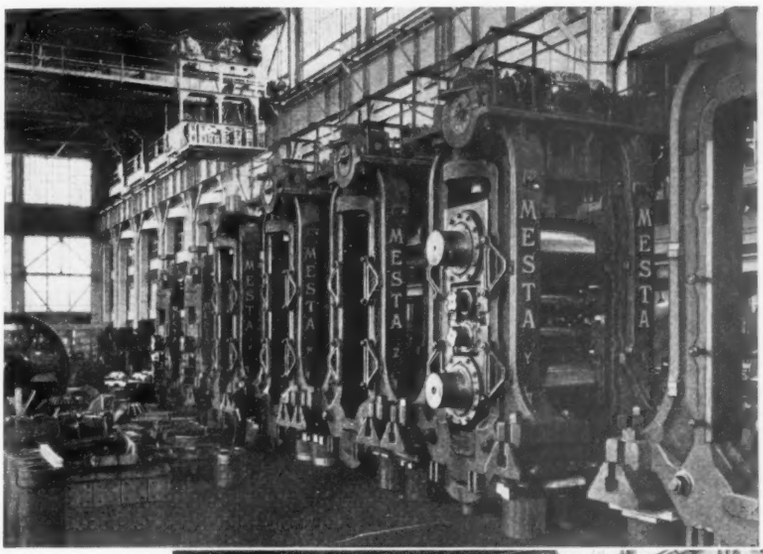
Housed in Steel Buildings

The buildings housing the plate, skelp and merchant mills open into a common storage and shipping building 125 feet wide and 472 feet long. All mill buildings are of steel construction, sided and roofed with corrugated sheets with the exception of the motor rooms and storehouses which have brick walls and composition roofing. They cover approximately 11½ acres. All monitors are provided with specially designed cars to facilitate the cleaning of windows.

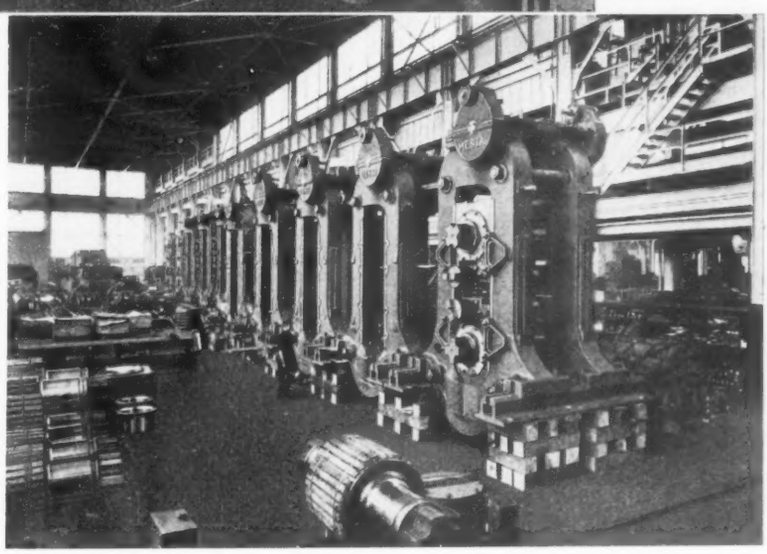
Steam for the gas producers and plant heating is generated in two 400-horsepower boilers of the sterling type. A common coal and ash handling system serves the boilers and producers. A motor room located at the blooming mill houses the main drive motor, motor-generator sets, switchboards and miscellaneous electrical equipment for the 900-ton press, slag-melting furnaces and processing equipment, and the reciprocating blowers for the bessemer converters. Another motor room located between the plate and skelp mill buildings houses the main drive motor for the plate mill, the 2000 and 1500-horsepower motors for the skelp mill, motor-generator sets, switchboards and miscellaneous electrical equipment for the three mills. The plant is served by 22 overhead traveling cranes with capacities ranging from 15 to 50 tons.

FOUR HIGH CONTINUOUS MILLS

For Rolling Wide Strip



Four High 60" Hot Strip Mill on Mesta Erecting Floor



Four High Cold Strip Mills on Mesta Erecting Floor

Designed and Built by

MESTA MACHINE COMPANY

Pittsburgh, Penna.

Windowless Plant Embodies New Construction Features

CONSTRUCTION of a windowless factory building by the Simonds Saw & Steel Co., Fitchburg, Mass., as announced in the Oct. 16 issue of STEEL, constitutes the first instance in the world of this advanced practice in the industrial field. The design and construction of the plant has been awarded the Austin Co., Cleveland, which pioneered in the building of windowless structures for large talking picture studios in California. Construction work is to start within the next few weeks and the plant will be ready for operation in the spring.

Weather To Be Manufactured

Every detail of the plant, from the provision for manufactured weather temperatures to the innovation of orange-colored paint for machines, has been developed from exhaustive biological and psychological studies involving the effects of work shop environment upon human efficiency. The company's aim is to surround its workmen with conditions found to be most ideally conducive to good health and which will reduce accidents, noise, fatigue and nervous strain, with consequent better production. Experiments conducted by the company have indicated that an increase in efficiency as much as 33 per cent may result from the new methods.

In the new Simonds plant, lighting will be accomplished by 1000-watt lamps mounted 18 feet above the floor line and enclosed in special steel diffusing shades giving a uniform light intensity of 20-foot candles on the working plane. This intensity promotes the ability to see and the speed of vision, thus reducing the hazard of accidents. By the introduction of some ultra-violet in the lighting system, a germicidal action beneficial to health is obtained.

Provision also has been made so that in case the power should fail an emergency lighting system, operated by storage batteries, would be thrown on automatically. The lighting system providing one sheet of light of equal intensity over the entire building is expected to make it easier to achieve uniform quality of product. A small percentage of light from the lamps will be reflected above to the ceiling, for the purpose of creating a more cheerful atmosphere in the building and will assist in the general diffusion of light.

Every precaution has been taken to insure the health and comfort of employes. Through automatic humidity control the moisture content of the air will be kept at the point most beneficial to health. Temperature also will be controlled and every 10 minutes over 500,000 cubic feet of air tempered to right condition and cleansed of dust and other outdoor impurities by washing and filtering will be brought into the building, making a complete change.

In hot weather the air will be cooled through evaporation by atomized spray bank. In cold weather the air will be heated through coils in auxiliary fan houses through which the air will pass after washing. The air will be delivered to various sections of the building through ducts. The heating system will be under thermostatic control. All fumes, gases, exhausts and excess heat are removed from the building by underground ducts.

Special study has been given to the problem of eliminating drafts, and fresh air is so delivered that employes will feel only the freshness of a slowly moving body of air. By control of humidity in winter a great deal of usual trouble from colds and similar diseases will be avoided.

Noise Reduction Studied

In order to lessen the nervous tension and distractions incident to modern factory din, extensive study has been made in search of a solution of the problem of noise reduction. The result is to be accomplished in a number of ways, through acoustical walls, ceiling and floor, through the insulation and padding of large machines and drop hammers, and by actual silencing processes.

The floor will have a concrete base with an acoustical wood block for such portions not occupied with equipment foundations. Machinery causing noise and vibration will be isolated from the body of the floor and cushioned with cork pads.

Noises from material in process of manufacture will be reduced by masking, tempering and dampening. The process of masking allows different noises of similar frequencies to counteract each other, while the process of tempering involves placing shields in machines where noise originates to intercept the wave action. In dampening, the material is restrained from giving out sound after the fashion of a tuning fork.

Like the walls, the roof is wholly solid, being of a metal acoustical type of high efficiency. The first layer of the roof's composition is a structurally strong perforated metal roof deck to permit passage of sound. Above this is a 1¼-inch layer of rock fiber bound with asphalt. Over this are 2½-inch layers of insulating board secured in asphalt. On top of this is a built-up water proofing. In addition to sound absorption qualities the roof has insulating qualities as well, keeping out heat from the sun in summer and retaining heat within the building in winter.

The walls of the building will be acoustical block with a facing of brick for architectural effect. It is expected that the building will absorb at least 60 per cent of the usual sounds. Due to the acoustical arrangements it will be possible to locate the plant office at one unpartitioned end of the building. Workmen near large machines will be able to converse in ordinary tones.

Adopts Color Scheme

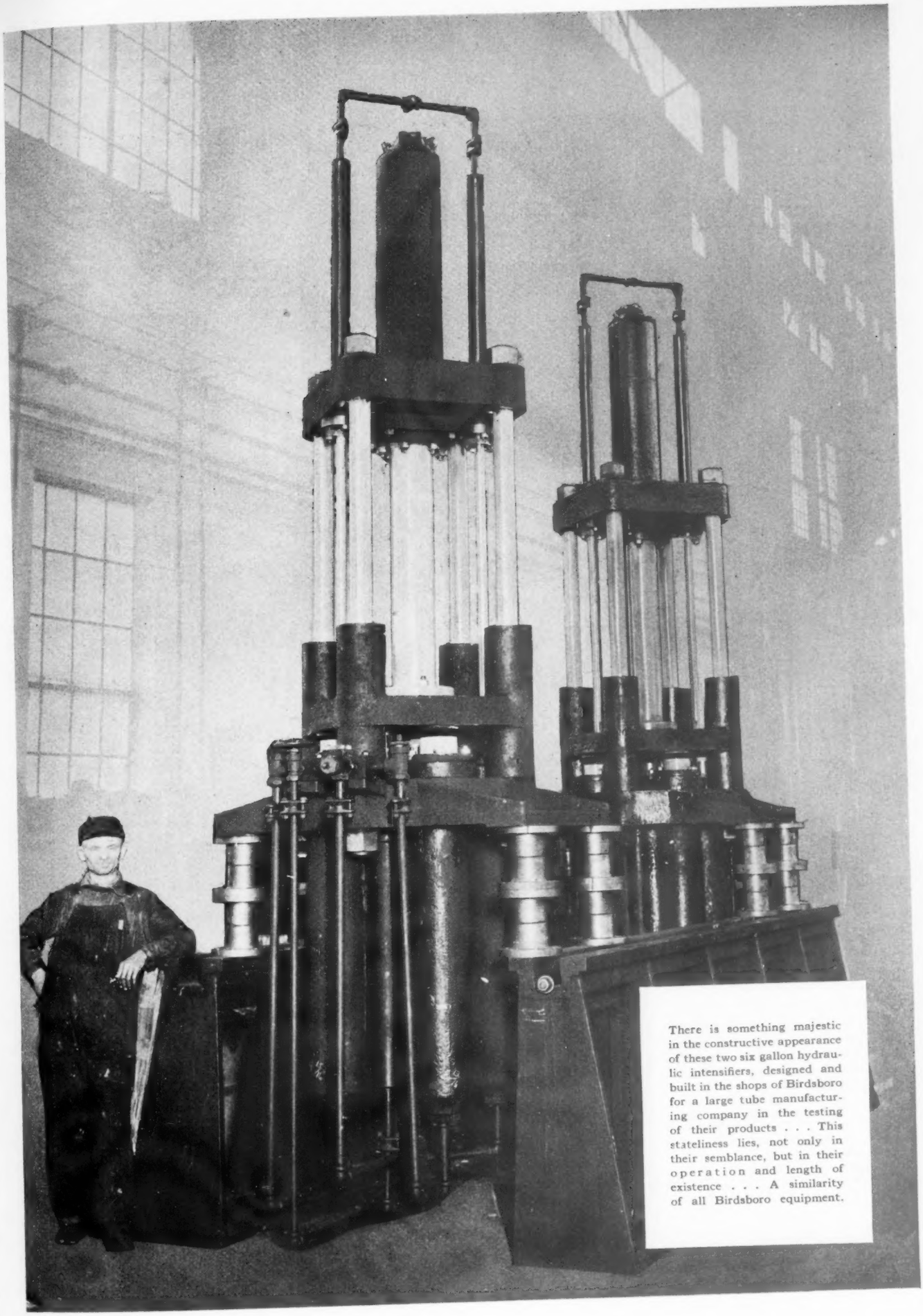
Colors for the interior have been selected with a view of attaining the best possible reaction from workmen, tending to keep them in a cheerful and active frame of mind while employed. The color scheme of the interior is blue, green and white for the walls and ceiling. The blue will reflect certain ultra-violet rays from the lamps. Green is the active or energizing component, while white is for the sensation of light and to reflect cleanliness. The company will initiate orange as the color for machines. The color was selected because it will lift the visibility of machine parts and aid in accident prevention.

The machinery layout of the plant will provide for straight-line production and it will be planned to reduce industrial fatigue to a minimum. Unnecessary motions will be eliminated from all operations and physical effort of the workmen will be reduced as much as possible. The building will be of single-story construction with no partitions and only 56 columns in the entire structure. The reduction in the number of columns has saved much space as each column consumes a space of a radius of 5 feet.

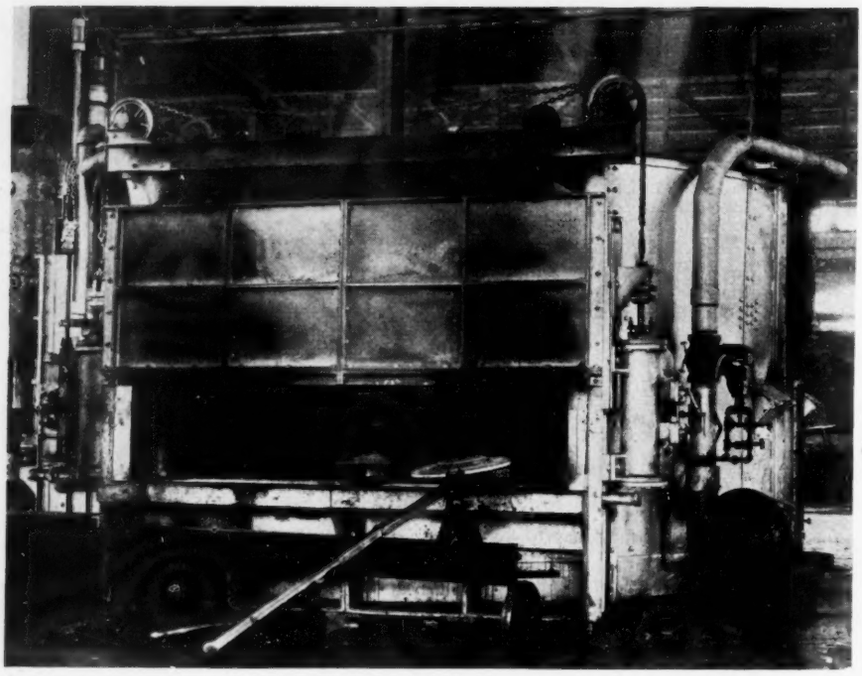
One of the interesting features of the new plant is the fact that washroom facilities for employes are to be comparable with the best of such facilities in the finest of city skyscrapers. Floors and walls will be of white tile and all fixtures will be of the latest type.

Plan Ceramic Congress

The American Ceramic society will hold its annual ceramic congress at Public Auditorium, Cleveland, Feb. 22-28, 1931. The program will cover art, enamels, glass, heavy clay products, refractories, whitewares and terra cotta.



There is something majestic in the constructive appearance of these two six gallon hydraulic intensifiers, designed and built in the shops of Birdsboro for a large tube manufacturing company in the testing of their products . . . This stateliness lies, not only in their semblance, but in their operation and length of existence . . . A similarity of all Birdsboro equipment.



Oil-fired furnace equipped with 15-foot rotary hearth mounted on roller bearings

Fabricates Plate Specialties in Modern Press Shop

A NEW hydraulic press shop devoted to the forming of heavy steel plate specialties recently has been placed in operation by the Worth Steel Co., Claymont, Del. This department is housed in a new steel building, 80 x 140 feet, adjoining the present flange shop and includes rotary furnace; and a 1200 and 400-ton, 4-post press having 60 inches clearance between posts and operated on 1500 pounds hydraulic pressure.

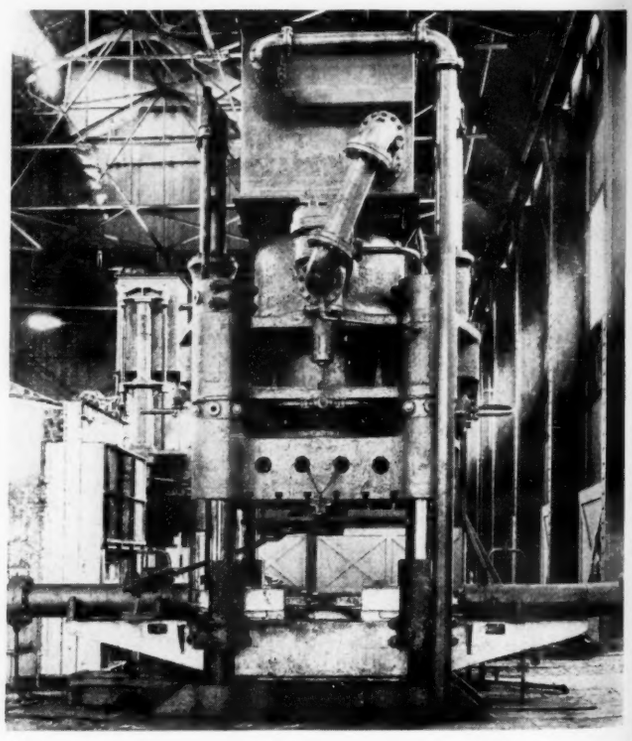
Furnace Has Two Doors

The rotary furnace has two doors and can serve the two presses simultaneously. The hearth is 15 feet diameter and is mounted on roller bearings. The rotating speed of the furnace is regulated so that the material will be brought to the desired temperature during one complete revolution, the time per revolution depending on the gage of the material and the working temperature. The furnace is oil fired and temperatures up to 2400 degrees Fahr. may be obtained, although the usual working range is from 1500 to 2000 degrees Fahr. The furnace is equipped with five low-pressure burners and with automatic temperature control. The latter, which enables the desired temperature to be maintained within a few degrees at all times, governs the draft fans and fuel feed so that uniform combustion is obtained.

The furnace hearth is lined with plastic refractories furnished by E. J. Lavino & Co., Philadelphia, the material being pounded into a hard covering on the hearth bottom thus obviating joints. The principal constitutent of the lining is chrome ore which is chemically neutral, easily cleaned, and has the property of absorbing large quantities of heat and giving up this heat readily, thus making a fast working furnace.

To Produce Fittings

Other equipment in this shop includes two open-throat presses, one of 333 tons and one of 200 tons capacity. It is the intention of the company to produce boiler and tank fittings, such as pipe flanges, collar flanges, nozzles, manhole covers, etc. These are being manufactured in accordance with the pressure vessel specifications of the American Society of Mechanical Engineers. The nozzles are being made under patents acquired by the Worth Steel Co. in sizes up to 16 inches inside diameter, inclusive, on the 400 and 1200 ton presses. Standard and high-pressure pressed steel flanges for pipe up to 12 inches diameter, inclusive, also are being formed on these machines.



1200-ton 4-post hydraulic press used for forming nozzles and high-pressure steel flanges for pipe up to 12 inches diameter

Revise Fuel System Standard

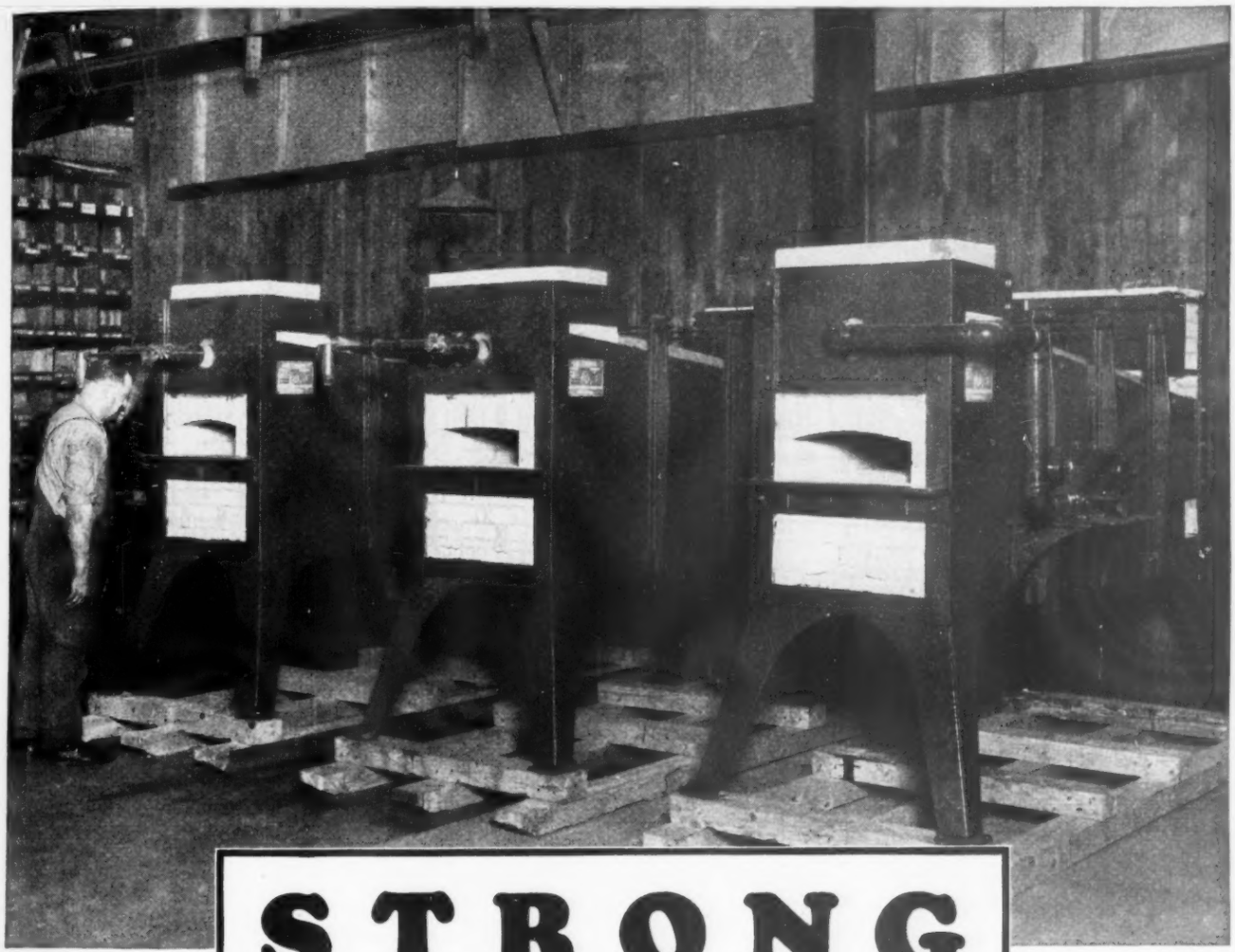
A revision of the American standard "Safety Code for the Installation of Pulverized Fuel Systems," has been announced by the American Standards association. The rapid increase in the use of pulverized fuel in many industries resulting in new developments in methods and design of equipment, is responsible for the revision. The original code was approved by the association in 1927.

Spring furnaces ready to go

THESE three Type 599 furnaces, a design which has proved exceptionally efficient for tempering automobile springs and similar small work, were in a recent shipment to a customer who has several others like them in constant service.

Type 599 is built in two sizes, either oil or gas fired. The smaller size has hearth dimensions of 18" wide x 6'0" deep, with an opening 16" wide x 4" high; the larger has hearth dimensions of 24" wide x 6'0" deep, with an opening 22" wide x 4" high. Both are over-fired, the flame striking a baffle built into the main arch, causing the hot gases to pass twice above work and once beneath the hearth. Gases exhaust through a port just inside the entrance, dropping beneath the hearth to be drawn off through a low stack built in the rear wall of the furnace.

Every type of electric, oil or gas furnace designed, built and installed by *Strong, Carlisle & Hammond* is constructed to give uniform, dependable operating efficiency over a long period of service. An S C & H Engineer will gladly consult with you on any type furnace you may require.

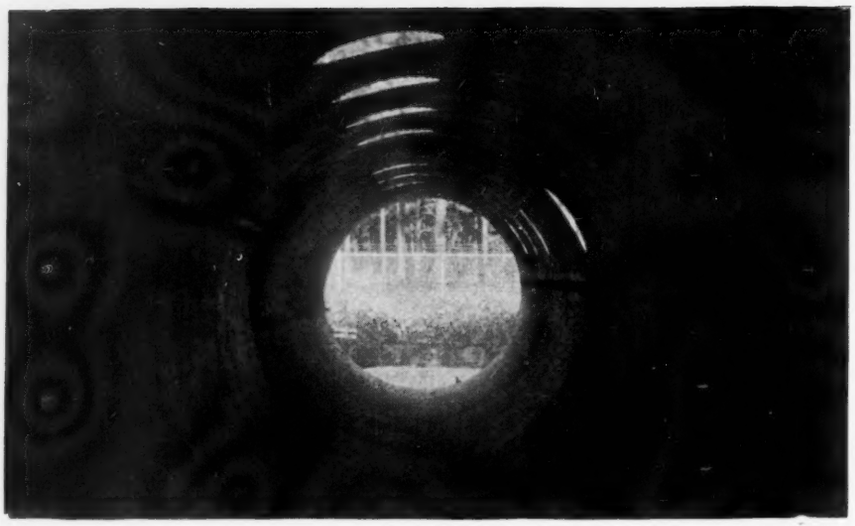


STRONG CARLISLE & HAMMOND

SC&H Furnaces are made for annealing, case hardening, carburizing, forging, cyaniding, lead hardening, oil tempering.

SC&H Furnaces are built in all sizes of Oven, Pot, Continuous, and Special Types for Electric, Oil or Gas application.

INDUSTRIAL FURNACE MANUFACTURERS · CLEVELAND, OHIO



Interior of a shell for a pressure vessel in which bubble trays are to be installed. The smooth surface permits the unobstructed entrance of the tray

Unusual Automatic Machine Does Diversified Welding

PRODUCTION schedules which required the welding of both large and small diameter cylinders in both long and short lengths over a range of plate thicknesses from 3/16 to 1 inch has instigated the installation of an unusual type of automatic welder by the Wyatt Metal & Boiler Works, Houston, Tex. After examining and testing all kinds and types of machinery, it was determined that automatic welding not only decreased the direct labor involved in the fabrication, but resulted in greater uniformity and subsequently stronger welds.

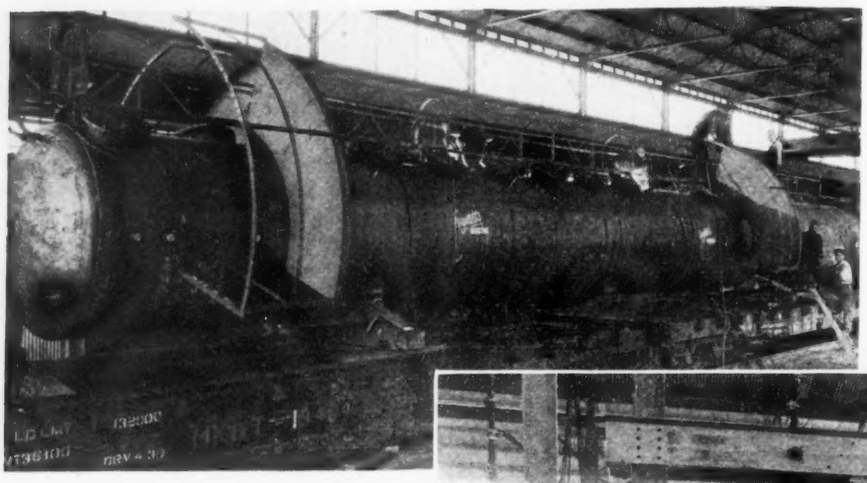
Specifications for the welder which had to be applied to the particular problems of fabricating oil field equipment were drawn up by the engineers of the Houston company assisted by arc welding specialists of General Electric Co., Schenectady, N. Y. It was fabricated by the General Electric company in its Schenectady shops. This automatic welder is of the clamp type and is so designed that cylinders 2 to 12 feet in diameter and 2 feet to 36 feet long may be welded on it. The air actuated clamp is contained in a cantilever beam below the machine. This beam may be replaced by a smaller one 20 feet long thus permitting utilization of the structure and electrical equipment in welding cylinders down to 14-inches diameter.

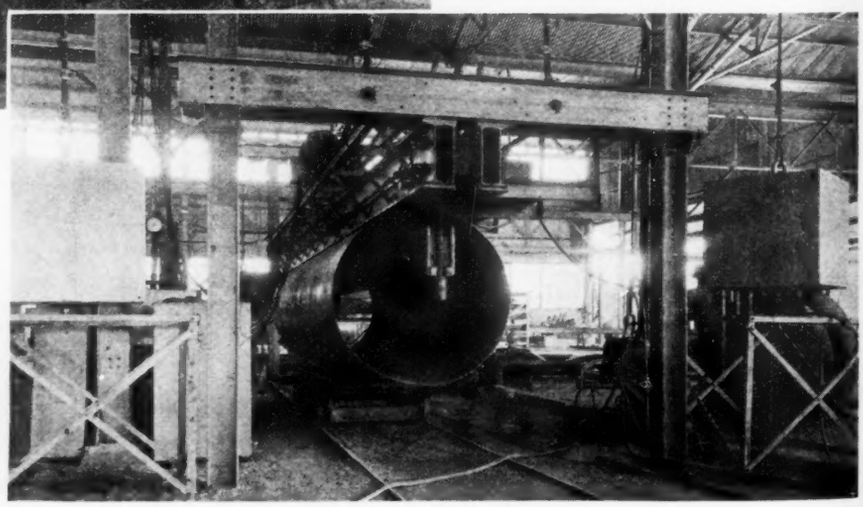
Operated Automatically

The welding apparatus is full automatic, having two welding heads mounted in tandem which make two beads simultaneously. This greatly increases the production speed of the machine and in addition gives a stronger weld due to heat treating action of the second arc while the first is still in a plastic state. The two welding heads are supplied with electrodes from two reels which are mounted with the heads. The whole is mounted on a roller bearing carriage operating on a runway and has an automatic drive that is synchronized to correspond with the feed of the electrodes.

Current is supplied to the welder from a 1000-ampere, 60-volt, constant-potential generator having the usual resistors and stabilizers for regulating the current and stabilizing the arc in the two welding circuits.

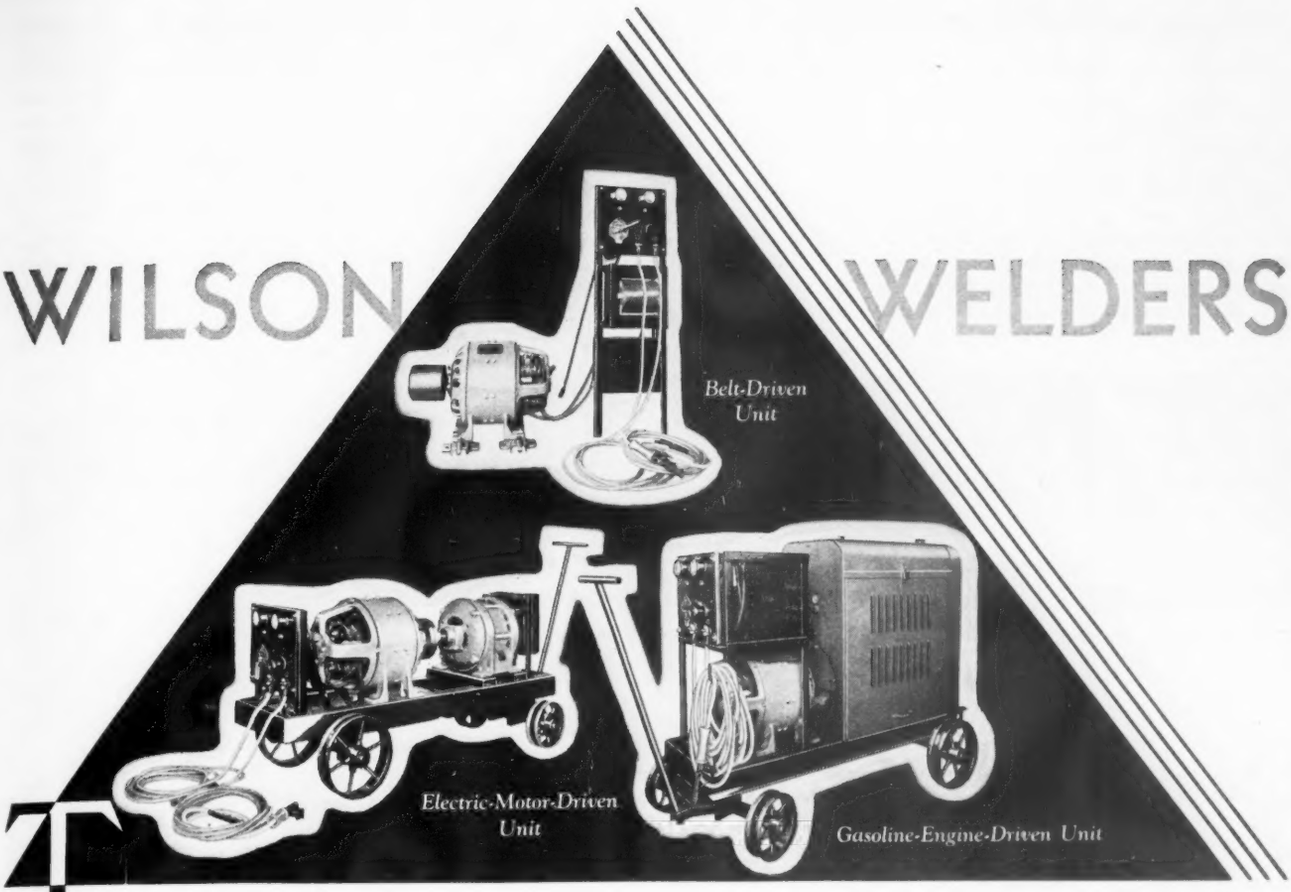
The automatic feature permits the use of heavy welding currents which obtain a speed impossible by any other method. For increasing the speed of production of long cylinders, two welding heads having two arcs each may be utilized. In this case one starts at the end of the cylinder and the other in the middle. The





A 6-foot 6-inch by 70-foot bubble tower with 35 feet between circumferential seams fabricated by the automatic welder is shown at the left. Below is an end view of the 36-foot welder in the operation of welding a shell on a pressure vessel

WILSON WELDERS



They *increase* your *output* and *decrease* your *outlay*

IN every industry where arc-welding is used, Wilson Machines *speed up production* and *slow down expense* — because, with Wilson Machines —

The arc is easy to strike and easy to maintain
The arc is uniform thruout the welding range
The arc is quickly adjusted from job to job
The generator is self-excited, and its commutator is always the coolest part of the machine
Only in Wilson Machines can you obtain all these features

Whether you are already using arc-welding, or are yet to profit by its advantages, you should know all about Wilson Welders. Write today for illustrated bulletins describing the complete line of Wilson Model S Machines —one-operator Type 100, Type 200, Type 300 and Type 400 ampere units; two-operator Type 400, Type 600 and Type 800 ampere units (one hour rating).

WILSON WELDER & METALS CO. INC., 24 WILSON BUILDING, NORTH BERGEN, N. J.

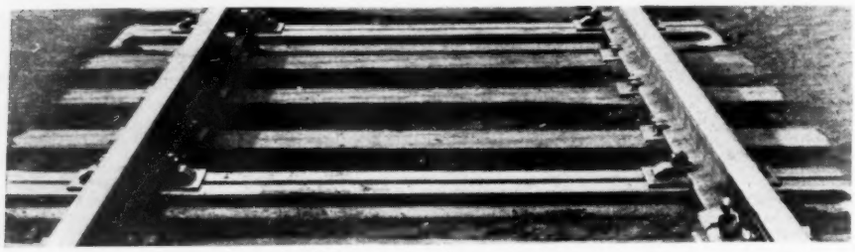
WILSON

WELDING MACHINES AND WELDING WIRE

finished bead is uniform, and smooth in appearance.

For pressure vessels it was found that a small light bead should be run on the inside and the full automatic weld on the outside. Repeated tests have shown exceedingly high joint efficiency in which all specimens have been pulled in the laboratory of disinterested parties. Specimens in which the welds have been ground off absolutely flush with the test bar have broken outside the weld. In this case no reinforcing action was offered by the weld.

Engineers of the company found that a highly important advantage in the use of this machine was the possibility of using cylinders with 36 feet between circumferential seams giving almost a gun barrel finish to the inside. In the manufacture of equipment for oil refineries this is particularly advantageous where flanged bubble trays must be inserted on 18-inch centers.

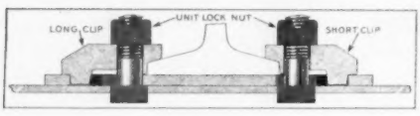


Steel ties used to reinforce track laid with wood ties. Every fourth tie is a steel tie. This type of installation prolongs the life of the wood ties and strengthens the track

Steel Ties Maintain Good Track Under Heavy Service

PRESENTING many refinements in construction and designed to combat the weakness of its predecessors, a new steel tie for heavy-duty work on standard gage track has been announced by the Bethlehem Steel Co., Bethlehem, Pa. The tie is especially adapted for use in sidings, yards, cinder dumps, roundhouses, industrial and construction track, and at other locations where the life of wood ties is comparatively short.

The tie is made of copper-bearing steel, channel-shaped, with a deep depressed rib running longitudinally through the center and a heavy reinforcing bulb at the bottom of the sides. The ends are depressed and flared in the shape of a "whale-tail," giving the tie a firm grip on the ballast and preventing lateral motion of the track.



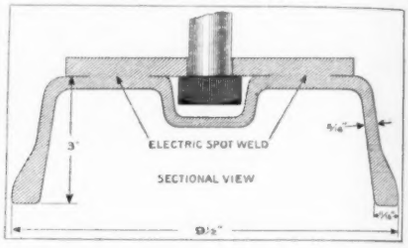
Cross-section of the tie showing the short and long clips. By interchanging these clips the gage may be varied ¼-inch on each rail

The rolled steel tie-plates are electric spot-welded to the tie, resulting in solid one-piece construction, and reinforcing the tie where reinforcement is most needed, beneath the rails. The tie plates are slotted crosswise to form a seat for the locking lug of the rail clip, preventing shifting of the clip and side movement of the rail, and are slotted lengthwise to permit easy insertion of the bolt.

The rail clips are made of heavy rolled steel shaped to fit over the base of the rail, and have a heavy lug on the bottom which fits into the slot in the tie-plate. The design of the clip is such that this lug transmits the lateral thrust of the rail direct to the tie-plate, relieving the bolt of all shearing action. Each clip is held in place by a heavy bolt and unit lock nut.

The square head of the bolt which locks the clip in position is firmly engaged beneath the overhanging shoulders of the tie-plate, and is prevented from turning by the walls of the channel which run through the center of the tie. Fastenings are applied or removed from the top without moving the tie or disturbing the ballast. A wrench is the only tool required.

The ties can be used for reinforcing wood tie track with every third or fourth tie a steel tie. These ties carry the full strain of the rail fastenings, preventing the spikes from shearing and the wood ties from becoming spike-killed, thus greatly prolonging the life of the wood ties. They may also be used on curves and steep grades as stiffeners and to replace gage rods; at cinder dumps, where wood ties quickly burn out; at water columns, where fires are raked and wood ties burn out; in yards and sidings, where the wood ties used are often not of the best quality; and where track has been torn up by derailments for temporary track. A wrecking train can carry several hundred of these steel ties, and they can be speedily installed with little labor, making it possible to maintain train schedules until the temporary track can be replaced.



Sectional view of the tie. The deep channel which is rolled through the center gives it additional strength and provides a head-lock for the square bolt

Additions Made to Program for Foundry Convention

In preparation for the 1931 convention of the American Foundrymen's association, to be held in Stevens hotel, Chicago, in May, as announced in the Oct. 30 issue of STEEL, the various subcommittees of the program and papers committee of the association report arrangements being completed for a full schedule of sessions, shop-operation courses and roundtable luncheon meetings. Papers to be heard on new foundry developments promise one of the most interesting conventions ever held for foundrymen.

To the shop operation courses on steel, gray iron and nonferrous shop practice held in the past, two more courses will be added in 1931, covering malleable foundry practice and sand control. It has become evident that these courses, organized particularly for the purpose of giving practical instruction in shop practice fundamentals, fill a distinct need.

Personnels of the gray iron and malleable shop-operation committees already have been selected, and the nonferrous steel and sand control committees are being organized.

The general sessions and roundtable luncheons meetings will complete the program which will start on Monday afternoon of convention week, continuing through Thursday. As at the Cleveland meeting last May, three round-table groups will be held to consider malleable, steel and nonferrous founding.

High-Chromium Alloy Steels; Their Present Status

BY E. C. BAIN
United States Steel Corp.

Part III

IN DISCUSSING the allotropic instability of the austenitic corrosion-resisting alloys a composition in the vicinity of 18 per cent chromium, 8 per cent nickel, and 0.06 to 0.08 per cent carbon will be assumed. Heating such a material at any temperature between 1700 degrees Fahr. and 2400 degrees Fahr. will suffice to produce a pure austenite which, with even a moderate cooling rate, will remain unchanged to room temperature. The condition is entirely persistent except when subjected to cold deformation. It is the behavior of this alloy accompanying cold work which gives evidence of its essential instability as austenite. Ordinary metals which are not in an undercooled state, and hence not subject to transformation, harden in a regular manner with increasing cold work. Thus a soft steel which shows a brinell hardness of about 100 will, after a certain amount of cold work, harden to a figure of 160 brinell. With equal deformation in a piece of 18-8 alloy the hardness changes from about 86 to 400 brinell. The inordinate hardness increase points strongly to some unusual change in the metal. X-ray crystal analysis and magnetic measurements show that a considerable portion of the alloy transforms during this severe deformation to form ferrite. The ferrite is also considerably cold worked and so far as can be determined still retains the carbon in super-saturated solution; altogether the transformed metal is in a condition somewhat similar to martensite. So far as transformations are concerned the cold deformation can only act to "stir" or "knead" the metal, thereby permitting the more stable phases to form. The evidence therefore seems conclusive that the austenite is not stable at low temperatures and that the equilibrium state must be substantially as shown in Fig. 12.

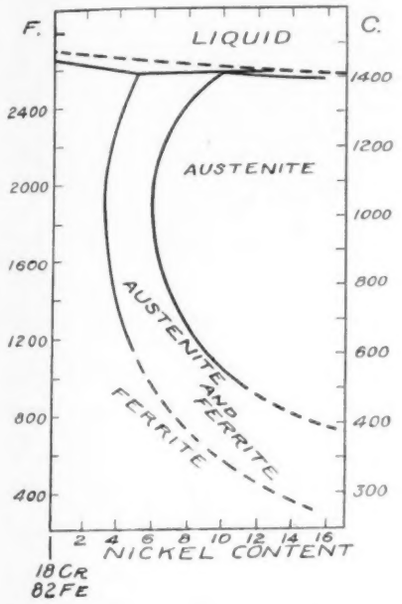


Fig. 12—Approximate constitution of the 18 per cent chromium alloys with varying nickel content, carbon content being negligible

Nickel Reduces Ferrite

Less ferrite is produced in the case of higher carbon than in lower carbon 18-8 alloys, but the hardening by cold work may be as great. Nickel also gradually lessens the amount of ferrite formed by cold deformation as indicated in the diagram of Fig. 12. The usual commercial alloys are clearly stable, in the physical-chemical sense, only as ferrite at low temperature in spite of the persistence of the austenite.

It follows, then, that the 18-8 alloys must possess transformation points corresponding roughly to the A_1 and A_2 points of hypo-eutectoid steels. By means of reheating the cold-worked and hence ferritic alloy to successively higher temperatures and observing the temperature of first diminution of ferrite and the temperature of its ultimate disappearance these points have been located for the 18-8 alloy with various carbon contents. The amount of ferrite remaining after various temperatures of reheating has been estimated both by X-ray crystal analysis and by magnetic measurements and the results are summed up in the chart of Fig. 13. The chart represents the phases at equilibrium in alloys containing 18 per cent chromium and 8 per cent nickel with carbon contents as represented on the abscissa. The carbon is represented as being wholly in solution. As will be discussed subsequently, the upper critical point is somewhat difficult to locate accurately in the case of higher carbon alloys due to the complication of carbide precipitation.

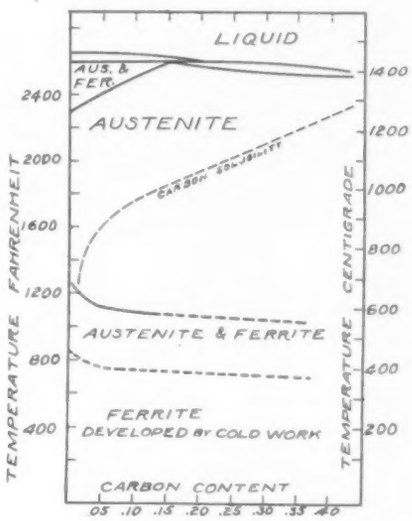


Fig. 13—Approximate constitution of the 18-8 chrome-nickel alloys with varying carbon content. The dotted line indicates carbon solubility. The ferrite and austenite boundary lines assume carbide in solution

In the diagram of Fig. 13 the occurrence of the high-temperature ferrite is shown also. In the lowest carbon 18-8 alloys it may separate at about 2300 degrees Fahr. and increase in magnitude with heating to higher temperatures until it forms as much as 20 per cent of the whole. Ferrite thus formed is softer at high temperatures than the austenite in which it is dispersed and, since it is almost always present in the ingot may offer some difficulties in rolling.

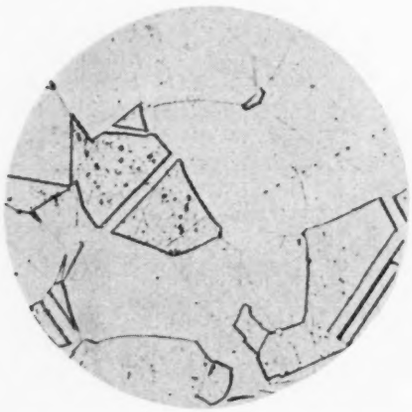
INORDINATE hardness increase as a result of cold work is a characteristic of the chrome-nickel alloys of low carbon content. The mechanism of this change is discussed in the accompanying article, the third of a series to appear in STEEL. The information is from a paper presented at the recent meeting of the American Iron and Steel institute in New York. The author, Edgar C. Bain, is metallurgist, research laboratory, United States Steel Corp., Kearny, N. J.

Here again skill and practice are required in the fabrication of the metal.

The low-temperature ferrite which, due to the sluggishness of the alloy, is produced only by cold work, is microscopically different from the high-temperature ferrite. The mobility and diffusion rates in the metal near the melting point are sufficient to cause the ferrite to coalesce into sizable particles and they are easily recognizable in the etched specimen under the microscope by virtue of their more severe attack. The low-temperature ferrite apparently occurs only in the slip bands which form during deformation when the metal is, momentarily at least, fluid. After some practice an observer is impressed with the difference in slip band appearance between a stable austenite and an unstable one. At the highest magnification it may be seen that some constituent actually exists in the slip bands of appreciable width, as shown in Fig. 16. With considerable experience the amount of ferrite may actually be estimated roughly by the nature of the appearance of the cold worked metal. Fig. 14 shows a photomicrograph of the pure austenitic alloy and Figs. 15 and 16 are of the same material as cold worked.

It may be mentioned perhaps that the slight cold work involved in preparing a polished specimen will produce some slight transformation of a purely austenitic alloy. This may be observed microscopically and checked magnetically. It has been observed that those crystal grains which present their 1-1-1 planes parallel to the polished surface transform most easily and, accordingly, three sets of lines are usually observed at an angle of about 60 degrees to each other in a single grain. Many repolishings and re-etchings will usually eradicate this transformed metal if of normal composition. Low-nickel alloys are most susceptible and high-nickel alloys are least susceptible; large grains are more susceptible than small ones.

Cold worked metal of this type dissolves more rapidly in the active reagents than the annealed metal, as would be expected, but when the alloy is in contact with oxidizing reagents which have little or no effect, then there is no observable difference between the resistance of the metal in the two conditions. And this might be predicted since, by all indications, it is a surface layer which protects the metal, a layer which depends for its formation solely upon the composition of the metal. In this case the usual electrochemical potentials would be inoperative immediately as the impervious layer is established; low-temperature ferrite probably has the same composition as the adjacent austenite.



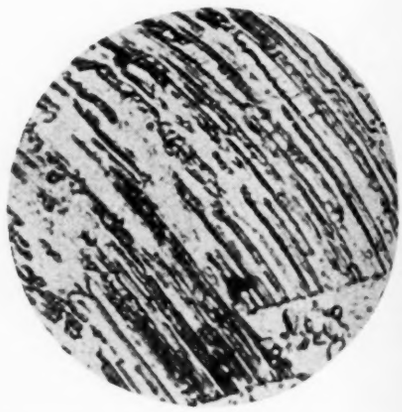


Fig. 14—(Left)—Pure austenitic alloy, with the characteristic parallel twin-band markings. X500. Fig. 15—(Center)—Cold-worked austenite showing the inordinately prominent slip bands in this unstable metal. X500. Fig. 16—(Right)—Cold-worked austenite showing the slip bands clearly widened by a second phase which is ferrite. X1500

Carbon Solubility Lower

The austenite of plain carbon steels may contain up to 1.7 per cent carbon at the eutectic temperature and it is somewhat surprising to find a much lower solubility for carbon in the austenitic chrome-nickel alloys. In the 18-8 alloy the carbon solubility at the analogous temperature is only about 0.50 per cent; more than this amount always will remain as chromium carbide even though the metal be quenched from near the melting point. At lower temperatures the solubility of carbon falls off rapidly, reaching a value of only a few hundredths of one per cent at about 1100 degrees Fahr. The approximate solubility is shown in the dotted line, Fig. 13.

The unusually great change in solubility with temperature immediately calls to mind the precipitation hardening alloys such as duralumin, temp-alloy, etc. Carbide dissolved at the higher temperatures is precipitated by slow cooling or by being held at a temperature a little below the temperature of complete solubility, but it is permanently preserved in solution by rapid cooling to room temperature. A subsequent heating to temperatures of about 1000 degrees Fahr. or above, at which some diffusion may occur, will instigate reprecipitation. In the case of the precipitation hardening alloys, the separation of the excess dissolved constituent usually occurs uniformly throughout the individual grains, but in this case, if the metal has not been cold worked, the precipitation is largely restricted to the grain boundary path which is, in principle at least, the location of normal precipitation for any excess constituent. Under conditions of free migration all precipitates rejected from solid solution ultimately find their way to grain boundaries. Presumably the reason for the peculiar behavior of the carbide in this instance is that carbon itself may diffuse rapidly to the region of most facility for precipitation whereas the chromium is rigidly fixed in the solid solution crystal.

Most of the precipitation alloys have in solid solution more nearly similar elements of approximately equal diffusion rates which would combine immediately as diffusion became possible. In cold worked metal the precipitation occurs on all slip planes as well as upon grain boundaries, the conditions being in essence similar in the two locations. The immediate result of the reprecipitation of carbide at intermediate temperature is a slight increase in hardness and a moderate loss of ductility. This occurrence in itself would not be of such great importance if it were not for certain attendant circumstances.

It has been observed that the austentic alloy in which carbide has been precipitated does not possess the full resistance to corrosion attack which is the outstanding property of the normal alloy free from carbides. This deficiency is the more surprising when one considers that the carbide always present in the

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TUNE IN THE WESTINGHOUSE SALUTE OVER N. B. C. NATION-WIDE NETWORK EVERY TUESDAY EVENING

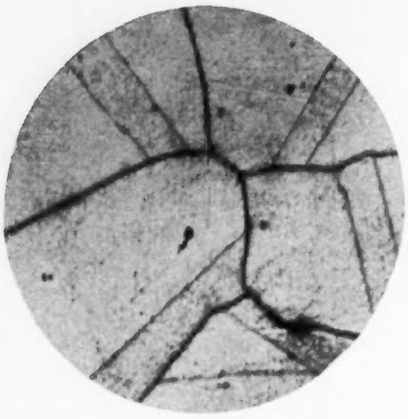


Fig. 17—(Left)—Annealed chrome-nickel metal in which carbide has precipitated in the grain boundaries. X500. Fig. 18—(Right)—Cold-worked metal in which carbide has precipitated upon the slip planes. X500

annealed ferritic alloys is of little or no consequence. The explanation probably lies in the limited diffusion of chromium. The corrosion attack in previously annealed metal which has been rendered "sensitive" by carbide precipitation follows the grain boundaries where the carbide precipitation occurred, leaving the body of the grain unattacked. It is believed that the formation of carbide particles rich in chromium depletes the immediately adjacent solid solution of its chromium, and that chromium diffuses too slowly at the low temperatures to restore the chromium content of these paths up to the concentration required for adequate protection.

Slip Planes Attacked

When, instead of annealed metal, cold worked material is allowed to undergo carbide precipitation the corrosion resistance is likewise impaired, but in this case the vulnerable regions are not confined to the grain boundaries but each slip plane seems to suffer attack. In certain active reagents the surface of the metal is darkened whenever carbide precipitation has occurred, and immersion in these solutions is sometimes employed as a test for metal as to precipitation sensitiveness. The cold-worked metal blackens much more rapidly and intensely than the previously annealed material, for in the latter case the attack, although severe, is confined to the grain boundaries. Indeed, metal which is pickled while in the sensitive condition may actually lose nearly all its grain boundary material and fall to a powder consisting of the many polyhedral grains. Fig. 17 is a photomicrograph of annealed metal in which carbide has precipitated and Fig. 18 is cold-worked metal in the same state of precipitation. Figs. 19 and 20 are the same, respectively, at higher magnification.

The condition of impaired corrosion resistance is not irreparable; indeed a single heating will restore the metal to its full effectiveness against corrosion. The essential part of the restoring treatment is the healing of the attackable regions by a uniform distribution of chromium. The *total* chromium in any ordinary analysis is sufficient, provided it is uniformly distributed. The heating will dissolve some of the chromium carbide—or all of it if the temperature is above that required for complete solubility of the carbon—and chromium from the interior of the grains will diffuse to the depleted zones. The time at given temperature must however be sufficient for these diffusion processes if restoration is to be satisfactory. Cold worked metal, as might be expected, is restored after becoming sensitive more quickly than annealed metal.

It is important that the austenitic alloys of this type are not subjected to corrosive liquid or gaseous environments while in this condition. This applies both to pickling treatments and to use in active gases. If such attack has proceeded the metal cannot be restored by the heat treatment.

It has been suggested that the sensitive condition of the alloy resulting from prolonged intermediate heating is due to ferrite precipitation, and it is true that the metal is noticeably magnetic after a heating at about 1100 degrees Fahr., during which carbide precipitation occurs. But the metal only becomes magnetic when the precipitation occurs at temperatures below the upper critical point of the decarburized metal in the vicinity of the carbide particles. If the precipitation occurs above this temperature the metal does not become magnetic but is still impaired by the action. Furthermore, nickel may be contained in the 18 per cent chromium alloy to such an extent as to lower the critical points greatly, but still the carbide precipitation does impair the corrosion resistance with no accompanying ferrite. Incidentally, in such high-nickel alloys (11 to 13 per cent) carbide precipitation seems to occur much more slowly. Other conditions being uniform the carbide precipitation varies in rapidity and severity with the carbon content.

Fabrication a New Art

In conclusion, it should be emphasized that the general metallographic behavior of the high-chromium stainless steels and irons differs so markedly from that of plain carbon steels and low-alloy steels that their manufacture and fabrication is in many respects a new art.

The properties are closely dependent upon the structure of the metal and its observation affords therefore a convenient method of recognition and control of the industrial properties which are to be developed.

For the uses to which the high-chromium and chrome-nickel alloys are applied, which demand permanence and exceptional mechanical properties, each application is worthy of separate consideration. Only with a full understanding of the precise conditions of service can the metal best suited to the purpose be chosen. No one alloy is best for all the conditions. Ultimate economy clearly points to the necessity of the fullest co-operation between the manufacturer and the user of this material.

—THE END—

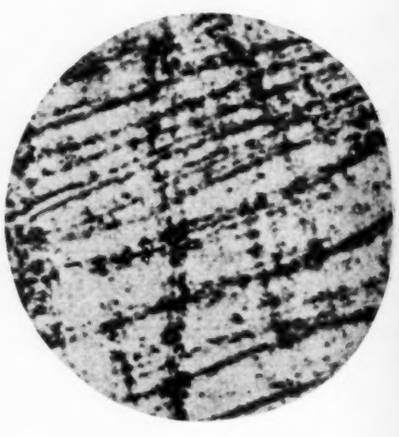


Fig. 19—(Left)—Same metal as shown in Fig. 17. X2000. Fig. 20—(Right)—Same metal as shown in Fig. 18. X2000

Large Uses of Steel in Small Ways

178th Article

◆

Water Towers

NEW YORK city tested recently its highest water tower which has capacity for spouting 8500 gallons of water per minute through four nozzles. The tower weighs about 13 tons and 80 per cent of it is steel.

The new unit is similar in design to modern water towers. It is attached to a truck, drawn by a four-wheel, gasoline motor driven tractor. The total wheel base is 36½ feet. The main truck frames are of heat-treated channel steel to combine lightness with strength.

The tower in this unit is constructed in two sections. The lower section is made of four 1½-inch steel angle bars, riveted to 1-inch perforated steel plates to form a box-type mast. Truss rods are provided on all sides to prevent buckling and the top of the lower section has rollers to facilitate the up and down movement of the upper section.

Tower Raised Hydraulically

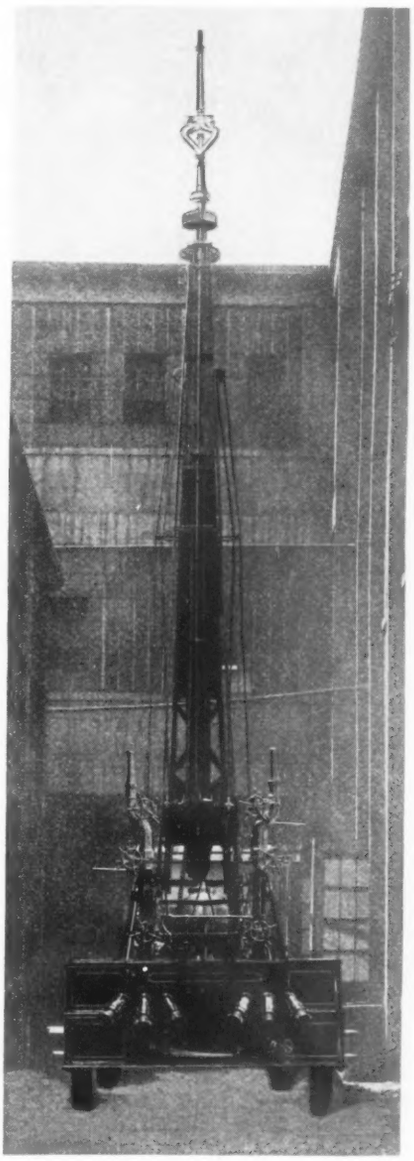
The upper section is made of homogeneous extra heavy steel pipe 5 inches in diameter, strengthened at its center portion with reinforcing sleeves.

The tower is raised by the hydraulic method by means of three cylinders, each tested to 500 pounds per square inch pressure. The complete operation of raising may be accomplished in 30 seconds.

Water towers are intended for use in cities having tall buildings and relatively few are manufactured each year. The American-LaFrance & Foamite Corp., Elmira, N. Y., large manufacturer, estimates that about three of the large type towers are built each year, requiring 30 to 35 tons of steel. However, the steel in the towers represents but a small percentage of the total required in the apparatus. A special high pressure self-propelling pump is usually required for each tower and sometimes two or more are used. An increase in the use of water towers by fire departments may be expected and this undoubtedly will lead to a fairly substantial annual demand for steel. About 15 per cent of the water tower is of brass and other nonferrous metals.

It is difficult to estimate the total volume of steel business represented by the annual demand for fire protection equipment in this country. In its broadest scope it represents thousands of tons.

The bureau of census, Washington, does not compile figures covering this industry as a whole, but it states the annual production of chemical extinguishers is valued at $8,000,000. A large amount of steel pipe is used for high-pressure water mains. In the Manhattan district of New York the high pressure distributing systems consist of 128 miles of steel mains from 8 to 24 inches in diameter, and about 2750 four nozzle hydrants.



A 65-foot water tower built of steel. This tower has three sections, it is not fully extended in this illustration

National Founders Group To Meet Nov. 19-20

Economic and sociological subjects as well as technical problems are to be discussed at the thirty-fourth annual meeting of the National Founders association at Hotel Astor, New York, Nov. 19-20. The program for the two-day meeting is as follows:

Wednesday, Nov. 19

MORNING

Reports of officers and committees.
"Progress and Prosperity," by Dr. Harry Myers, Dayton, O.

AFTERNOON

"Constitution Day," by Charles Nagel, Nagel & Kirby, St. Louis.
"New Problems in World Industry," by Walter Case, Case & Pomeroy, New York.
"What the Farmer Really Needs," by Thomas Campbell, Hardin, Mont.
"Unsound Economic Practices in Electrical Construction," by T. Yeoman Williams, League for Industrial Rights, New York.

EVENING

"The Human Melting Pot," by Edward Grant Conklin, professor of biology, Princeton university, Princeton, N. J.

Thursday, Nov. 20

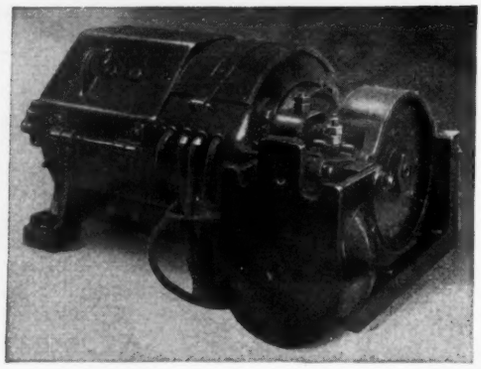
MORNING

"Money Savers for the Jobbing Foundry," by William C. Wright, consulting foundryman, National Founders association, Chicago.
"A New Use for Gray Iron," by Robert E. Moore, vice president, Flockhart Foundry Co., Newark, N. J.
"Technical Leadership in the Foundry Industry," by Richard S. McCaffery, professor of metallurgy, University of Wisconsin, Madison, Wis.

New Mill Will Roll Plates in 400-Foot Lengths

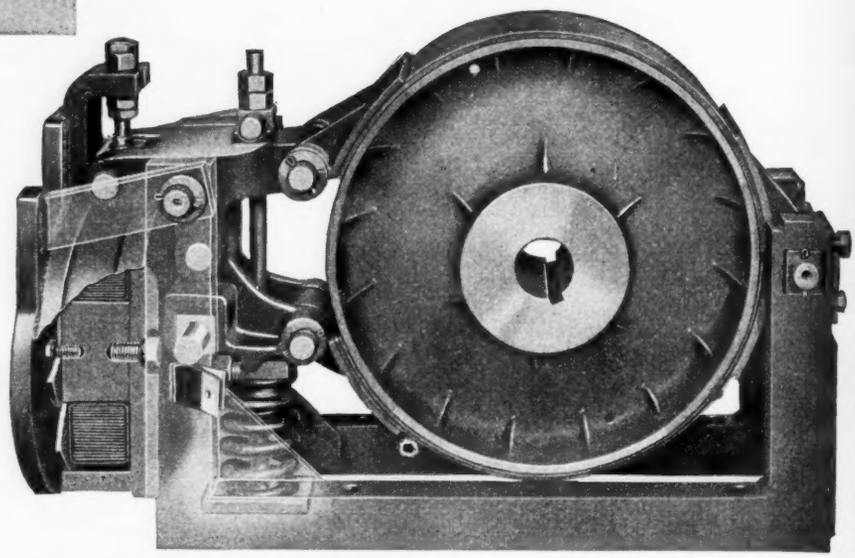
A mill now being built in the shops of the United Engineering & Foundry Co., Youngstown, O., for a plant in the Chicago district will roll plates from ⅛-inch to 1½-inches thick, in widths of 90 inches and in lengths ranging from 300 to 400 feet long. Plate mills have been built to handle specifications from ½ to 1½-inches thick, 210 inches wide and from 50 to 100 feet long, but none ever has been built to make larger tonnages of plates of such length as the one now under construction.

Output of the mill will be used for the fabrication of electric welded pipe, tanks, boilers and buildings. The mill includes three stands of 2-high rolls, 52 inches diameter and 96 inches long, and six stands of 4-high rolls, 24 inches diameter and 96 inches long. The entire unit will weight about 8000 tons of which about 95 per cent is cast or forged steel. Six frames weighing 70 tons each, 12 housings weighing 80 tons each and six housings weighing 76 tons each will be required.



G-E CR9517 magnetic brake mounted to show operating position

Phantom view of G-E CR9517 magnetic brake. Note minimum adjustments and simple construction



New and Entirely Different the G-E Band-Type Magnetic Brake

Power to grip and hold—powerfully built—easily adjusted.

Low pressure—approximately 15 to 18 pounds per square inch for a 30-minute rating—minimizes wear on brake lining and wheel.

Coil terminals are secured to the magnet frame. Coil magnet—easily replaced without changing brake adjustment—is so mounted that terminals can be brought out either side of brake.

Brake bands interchangeable, top and bottom.

Balanced steel wheels can be raised vertically with top band thrown back.

Coils are form-wound, vacuum-treated, and compounded in the magnet frame.

These are the outstanding features of the new G-E CR9517 d-c. band-type magnetic brakes. Write the nearest G-E office for descriptive bulletin GEA-1296 containing complete information.

301-59

JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

Special Steels Discussed in Nontechnical Lectures

Under the sponsorship of Joseph T. Ryerson & Son Inc., Chicago, G. Van Dyke, manager, special steels department, is presenting at various points throughout the country lectures on alloy steels, tool steels and stainless steels. Recent meetings have been held in Minneapolis, Cincinnati and Milwaukee, where Mr. Van Dyke addressed about 200 engineers and shop men on each occasion. Further meetings are planned in other parts of the country.

The program, which usually covers the better part of a day, was prepared originally for the company's salesmen and service representatives, but the material has been condensed to 3 hours of lecture and 2 hours of practical demonstration and instruction including welding. The lecture gives a general background of the stainless steel alloys and a classification of the various analyses. The various characteristics of these different products are discussed such as corrosion resistance, machinability, formability, weldability, resistance to scaling, etc.

The fabrication of the 18-8 type is covered in considerable detail, including its general application to various industries. Another feature covered in the lecture is the use of high temperature-resisting alloys at elevated temperatures both in regard to physical properties, resistance to oxidation and creep values. Alloy steels and tool steels are described in detail and a display of samples is shown covering all of the types of steel and iron described in the lecture.

The lecture and demonstration is of a strictly nontechnical character and is understandable by shop men who may not have had technical training. All charts and tables used in the lecture are reproduced in mimeograph form and are supplied to those attending the lecture.

Cleveland Engineers Visit Steel and Wire Plants

Members and guests of the Cleveland Engineering society to the number of nearly 700 made an inspection trip to plants of the American Steel & Wire Co. on Oct. 28. Transportation was by special Baltimore & Ohio train, which took the party first to the Central furnaces. Here the extensive unloading facilities were inspected, as well as the blast furnaces and power plant, in which a 10,000-kilowatt generator has just been installed.

The party then was carried to the Cuyahoga works, where luncheon was served by the company. The afternoon was taken up by inspection of various features of this plant, including billet mills, rod mills, hot strip mills, cold strip mills and wire drawing departments. The day was rounded out by a general discussion of the plants at the society headquarters, followed by dinner and moving pictures.

Porcelain Enamel Products Manufacturers Organize

Manufacturers of products finished in porcelain enamel, meeting in Cleveland Nov. 6, organized a national association for the development of new products and a cooperative publicity and national advertising campaign. Officers of the new association, known as the Porcelain Enamel Institute Inc., are: President, R. A. Weaver, vice president, Ferro Enamel Corp., Cleveland; vice president and secretary, R. W. Staud, sales promotion manager, Benjamin Electric & Mfg. Co., Des Plaines, Ill.; and treasurer, William Hogensen, president, Chicago Vitreous Enamel Products Co., Cicero, Ill. In addition to Mr. Hogensen and Mr. Stoud the executive board members are: Bennett Chapple, American Rolling Mill Co., Middletown, O.; R. D. Landrum, Titanium Alloy Mfg. Co., Cleveland; Russel Grear, Porcelain Enamel & Mfg. Co., Baltimore; and Louis Ingram, Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

Companies participating in the organization of the association are as follows: American Rolling Mill Co., Middletown, O.; Mullins Mfg. Corp., Salem, O.; Ferro Enamel Corp., Cleveland; Republic Steel Corp., Youngstown, O.; Newport Rolling Mill Co., Newport, Ky.; Erie Enameling Co., Erie, Pa.; Spray Painting & Finishing Equipment Mfgs. association, Toledo, O.; Erwin Feldspar Co. Inc., Trenton, N. J.; Harshaw Chemical Co., Cleveland; Ingram-Richardson Mfg. Co., Beaver Falls, Pa.; Jones Metal Products Co., West Lafayette, O.; McGean Chemical Co., Cleveland; Patterson Foundry & Machine Co., East Liverpool, O.; Peerless Enamel Products Co., Belleville, Ill.; J. M. Seasholtz & Sons Inc., Reading, Pa.; Superior Enamel Products Co., St. Louis; Jacob Teller & Associates, Chicago; Titanium Alloy Mfg. Co., Cleveland; Toledo Porcelain Enamel Products Co., Toledo, O.; Vitreous Steel Products Co., Cleveland; Porcelain Tile Co., Chicago; Chicago Vitreous Enamel Products Co., Cicero, Ill.; Porcelain Enamel & Mfg. Co., Baltimore; Benjamin Electric & Mfg. Co., Des Plaines, Ill.; General Porcelain Enamel & Mfg. Co.; Chicago; B. F. Drakenfeld & Co., New York; and Pennsylvania Salt Mfg. Co., Philadelphia.

Flanders Broadcasts Faith in the Machine Age

Starting with the positive assertion that "the progress of democracy is the progress of invention," Ralph E. Flanders broadcast an address recently on the subject, "The Machine and the Democratic Ideal." The broadcast was one of a series sponsored by the Museums of the Peaceful Arts, New York, on the occasion of the special exhibition called Men and Machines.

Mr. Flanders, who is active in the machine tool industry as manager of the Jones & Lamson Machine Co., Springfield, Vt., also is a recognized authority upon the economics of the so-called machine age. He pointed out how invention first broke the monopoly held by noble and clerical orders in government and in knowledge, then—having freed the common man from mental and physical bondage—made him master of numerous mechanical servants. While seeing much room for improvement in the industrial structure as far as finance and distribution are concerned, Mr. Flanders believed that, "Machinery, and machinery alone, holds out promise of material plenty for all, of leisure which comes with plenty, and of a new kindliness which will grow of itself in human relations if we organize them wisely and well."

Sees Romance in Testing of Engineering Materials

Speaking over the facilities of the Columbia Broadcasting system Nov. 1 on the "Romance of Engineering Materials," H. F. Moore, professor of engineering materials, University of Illinois, Urbana, Ill., and past president of the American Society for Testing Materials, suggested that romance in the testing of materials was embodied in the knowledge that the work was of considerable importance in the lives of the million of men and women who are daily users of materials.

Prof. Moore likened the testing engineer to a modern prophet who visualized the aviator successfully handling his plane in the air with implicit confidence in the materials of construction; and who visualized men and women everywhere protected to an almost unbelievable extent against accidents in the home, on the street, in cars and automobiles by the use of safe tested materials. The address was phrased in simple, nontechnical terms which the average layman, unfamiliar with the more advanced phraseology of engineering, could understand easily. The talk was one of a series on the romance of present-day engineering which the broadcasting organization is sponsoring.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

Screw Conveyors

Practical use of screw-type conveyors for unloading mill products from vessels, discussed by H. E. Stocker, in Marine Review, November 1930, *p.* 82, 2½ *pp.*, 3 *illusts.*

Couplings of the various sections are flexible so that as the ship rises and falls with the tide, or as it lightens or gets deeper, the conveyor automatically will adjust itself to the changing conditions. Each section is composed of two spirals, welded around two 8-foot sections of tubing and turned toward each other by an electric motor in the power head. A section weighs only 140 pounds. Five 8-foot sections and a power head compose a set. The power head weighs 365 pounds. Four foot sections also are available for use under conditions requiring less distance. The 8-foot sections are connected by universal joints so that the conveyor may be deflected at a horizontal angle or ascending joint, or, for a deflection of 15 degrees at any descending angle.

—STEEL 11-13-30

FABRICATION:

Continuous Nitriding

Interesting features of the continuous nitriding process, discussed by R. J. Cowan, in Metal Progress, October 1930, *p.* 93, 6 *pp.*, 6 *illusts.*

Either a low temperature cycle of about 900 degrees Fahr. or a high-temperature cycle of about 1150 degrees Fahr. is used, separately or in different combinations. Generally speaking, nitriding at low temperature produces maximum hardness, while high temperature produces maximum penetration. In the continuous process, ammonia enters the reaction chamber along with the work and travels in the same direction as the work during the entire operation. By this means the new metal surfaces come into contact only with full strength ammonia which exerts its full nitriding power on the metal at a time when it is most susceptible to its action, and without any retardation from excessive hydrogen decarburization. For this reason it is not necessary to agitate the gas to prevent decarburization.

The character of the case desired determines the arrangements of the heat zones. A hard case may be produced by lengthening the low temperature zone with the consequent shortening of the high-temperature zone, whereas a tough case with greater penetration may be produced by placing the high-temperature zone first and the low-temperature zone last in the cycle. By varying these zones, both as to their order and their relative length, it is possible to obtain any particular result that may be desired.

—STEEL 11-13-30

Truss Design

Door and window openings dictate irregular layout of trusses spanning church auditorium and require design following polygonal web system, by Albion N. Van Vleck, Engineering News-Record, Oct. 30, 1930, *p.* 690, 1 *pp.*, 1 *illust.*

The structure replacing the old Calvary Baptist church, New York, is a combined church and residential hotel of 16 stories of which the church occupies a portion of the first 5 floors and has its ceiling just beneath the fifth floor level. In order to utilize the space on the fifth floor over the auditorium, it became necessary to design the trusses supporting the upper stories so as to permit many window and door openings through the web system, thus preventing all symmetry of truss layouts and duplication of truss designs. The solution of the stresses in the trusses was made by graphical means, the results being checked analytically. The increase in weight due to the polygonal web system amounted to about 23½ per cent.

—STEEL 11-13-30

PRODUCTION:

Carbon Steel Castings

Preliminary studies of the effect of deoxidation and mold conditions on the tensile properties, discussed by J. V. McCrae and R. L. Dowdell, in bureau of standards research paper No. 199, 12 *pp.*, 2 *tables*, 2 *illusts.*

Foundrymen frequently experience difficulties with steel castings in meeting ductility specifications of 24 per cent elongation and 35 per cent reduction of area if the steel is deoxidized with aluminum shortly after pouring the castings. Sound castings usually can be obtained in dry sand molds without the addition of deoxidizers immediately before pouring. Green sand molding generally is desired but porosity, as pinholes, often occurs. Aluminum and other deoxidizers studied eliminated porosity but lowered the ductility. The mold conditions probably are the important variables responsible for pinholes. A sufficient amount of deoxidizers should be in the steel at the time of pouring to deoxidize the steel from the gases evolved from the moisture contained in the mold.

—STEEL 11-13-30

Carburized Parts

Heat treating procedure for the benefit of the core and case, recommended by H. W. McQuaid, in Black and White, November 1930, *p.* 15, 6 *pp.*, 6 *illusts.*

Quenching automotive drive pinions directly from the carburizing box produces better results, when the steel is selected properly, than the best double treated drive pinion of the same analysis. The presence of excess carbides in the case tends to increase the brittleness of the case and the tendency to crack in grinding. Fine-grained normal steel should be insisted upon, particularly in the alloy grades. If a fine-grained normal steel can be obtained the most satisfactory heat treatment after carburizing will be to quench directly from the carburizing box. Where this is not satisfactory a single quench at a temperature above the critical range of the core is recommended, providing the steel is fine grained and normal. With coarse-grained steels, particular plain carbon, the strongest combination is obtained by double quenching to obtain a fully quenched structure in the core and case. In coarse-grained steels that are not heavily stressed, a single treatment just above the critical range of the case will be satisfactory.

—STEEL 11-13-30

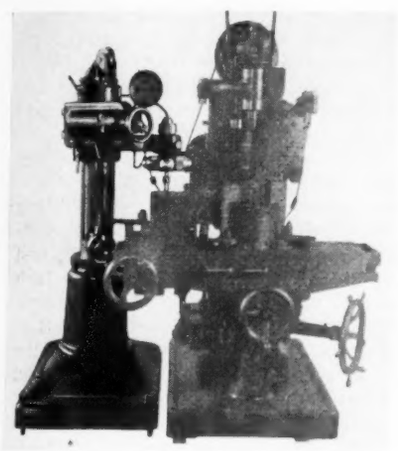
Machine Tools and Plant Equipment

"Without machine tools modern machinery could not be built."

—Joseph W. Roe

Transcriber for Millers Expedites Die Sinking

Walcott Machine Co., Jackson, Mich., has introduced a new transcribing instrument for use with any vertical-type milling machine to convert it into a die sinking machine. According to the builder, the device enables relatively unskilled operators to cut intricate dies, metal molds, etc., with speed and accuracy. The accompanying illustration shows the



Plaster models guide milling cutters through transcribing instrument

instrument as it appears when in operating position.

A plaster mold of the form to be cut is placed on the milling machine table to the left of the spindle and is lined up with the die block which is under the cutting spindle, this being done by means of pointers in the transcriber and milling machine heads. A "follow button," corresponding in form to the shape of the cutter, is inserted in the transcriber head, the table is adjusted so that the cutter is about 0.004 inch above the face of the die block, and the transcriber arm is lowered so that the follow button just touches the top of the mold.

By operating the table controls so that the follow button keeps in contact with the mold, the die block is cut as a duplicate to the mold. Accuracy is insured by a visual signal device on the transcriber head which is actuated by the follow button to show the operator exactly how to control the table feed. When the correct depth is reached the light in the center of the dial goes out, when there has been sufficient travel to the left the right-hand light goes out, etc. Thus, by means of five signal lights, the use of depth gages, radius gages, etc., is dispensed with. One plaster mold serves for 45 or 50 copies, and if larger quantities are demanded the first die is used as a guide in making the others.

Although the instrument weighs 2500 pounds, it can be rolled easily from one machine to another on its ball bearing castors, which come into play when the corner leveling screws are released. The instrument can be adapted to milling machine having heads that move vertically, by removing the instrument from its base and mounting it directly on the milling machine head. Current is obtained from any light socket.

◆

Speedy Automatic Produces Parts from Bar Stock

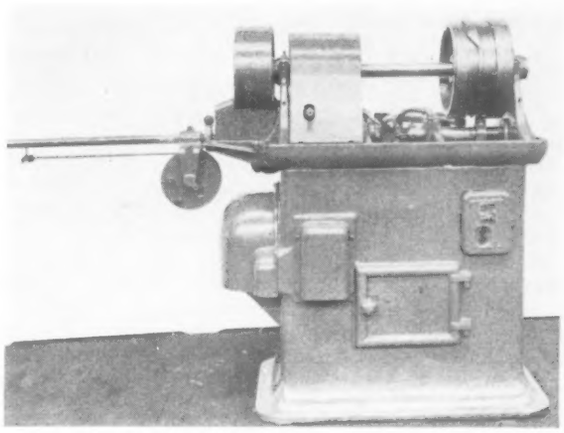
Potter & Johnston Machine Co., Pawtucket, R. I., announces a new single-spindle automatic machine for the rapid production of nuts and other parts from bar stock. As the accompanying illustration indicates, the machine has been designed for simplicity and economy.

The bed is a box casting which houses the motor, spindle drive, pump and reservoir for coolant and a strainer receptacle into which the work falls as it is cut off. This receptacle is readily accessible through the main door in the side of the base. The work spindle handles bar stock up to 1-inch round, or hex stock up to ⅞-inch across the flats, and the machine will make plain or castellated nuts of either U. S. or S.A.E. standard, from ¼ up to ½-inch bolt size. The spindle is mounted close to the bed on antifriction bearings, and runs at high speed without vibration or heating.

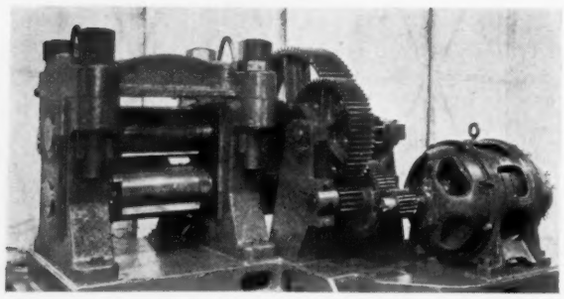
Drive and Stock Feed

It is driven direct from the motor by a silent chain, speed changes being attained by substitution of motor sprockets. The slack of the chain is taken up by an adjustable idler. Stock is fed by a cable-operated pusher, tension being given to the cable by a pulley actuated by a long, heavy coil spring. The stock is gripped by a collet pulled back into its seat in the spindle nose by a flanged tube actuated by fingers which are compressed positively by an external wedge collar. This eliminates troubles due to a centrifugal force at high spindle speeds. A permanent cam assembly for operating the collet mechanism is carried on a swing arm on the camshaft directly over the rear of the spindle. Economy of stock is achieved because the last bit of the bar is fed into the collet, and because successful use is made of cut-off tools only 1/16-inch thick. Soluble oil coolant can be used satisfactorily.

The camshaft is mounted acces-



This simple and efficient single spindle automatic features economy in production of nuts and other parts up to 1-inch diameter from bar stock



Scrap is reduced to conveniently handled lengths by this rugged rotary shear, which handles 20 x ¾-inch steel at 100 feet per minute

sibly directly above the work spindle and longitudinal tool slide. There are only three cams; two on the main drum for actuating the longitudinal tool slide and the double action swing arm, and the permanent cam operating the collet mechanism. Operations are synchronized to give the greatest efficiency, feeding and return movements being speeded up to minimize idle time.

The machine has a net weight of approximately 1900 pounds, and exclusive of the stock tube it is 4 feet 2 inches long, 4 feet 11 inches high, and 2 feet 3 inches wide. The design permits angular overlapping arrangement in batteries, convenient for loading and operation and economical of floor space.

◆

Rotary Shear Handles Scrap at High Rate of Speed

Thomas Spacing Machine Co., Fulton building, Pittsburgh, has brought out an improved rotary scrap shear, shown in the accompanying illustration. The machine will handle material up to 20 inches wide and ¾-inch thick at rates up to 100 feet per minute. The specially ground blades, which readily can be removed for sharpening, make four cuts per revolution, shearing the scrap into conveniently handled 15-inch lengths. By the use of a variable-speed motor the shear can be synchronized with any mill speed.

Ample Overload Capacity

The entire mechanism is mounted on a single bedplate, and housings, bearing stands and all other cast parts are heavy steel castings. Gears are figured with a large factor of safety to insure long life and great overload capacity. They are pressed and keyed on to open-hearth steel shafts which run in bronze bushings of generous size. Due to moderate loading, these bushings have long life. They are easily accessible for replacement.

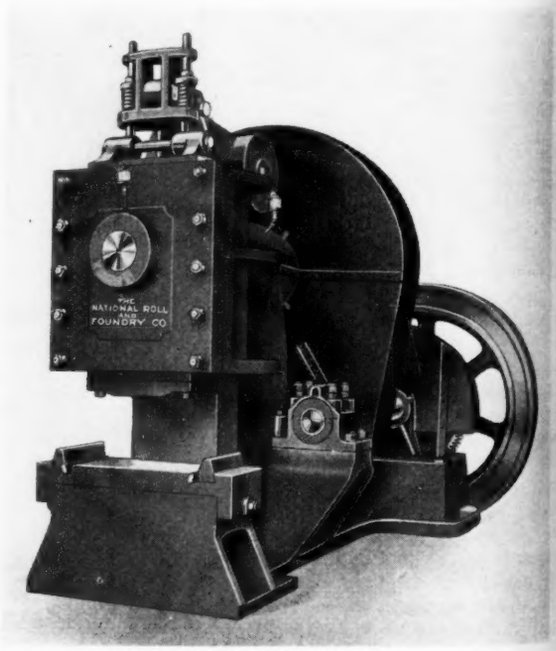
The unit shown in the illustration is located to simultaneously cut scrap coming from both sides of a trimming shear, and in addition it handles miscellaneous scrap from all parts of the mill.

◆

Powerful Rail Breaker Will Handle 150 Pound Rails

National Roll & Foundry Co., Avonmore, Pa., announce a new rail breaker, shown in the accompanying illustration. This machine is designed to break rails up to 7 inches high, weighing 150 pounds per yard, into pieces of various lengths which later are heated, and then by one pass through a pair of slitting rolls are cut lengthwise into three pieces, head, web and flange. These pieces are rolled into various products such as rounds, squares, concrete bars, angles, etc.

Frame and gears are of cast steel and all shafts are nickel steel forgings. The breaker is gear driven by an electric motor mounted on the main frame of the machine, making the whole thing a self contained unit. The net weight is approximately 45,000 pounds.



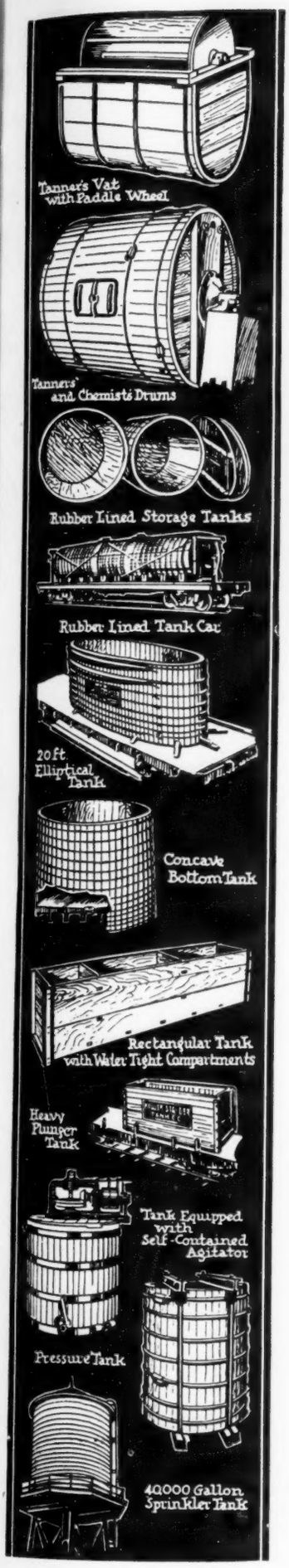
Old rails become more attractive as raw material for rounds, squares, concrete bars, angles and other shapes when this powerful breaker is used to reduce even the heaviest ones to lengths for reworking

◆

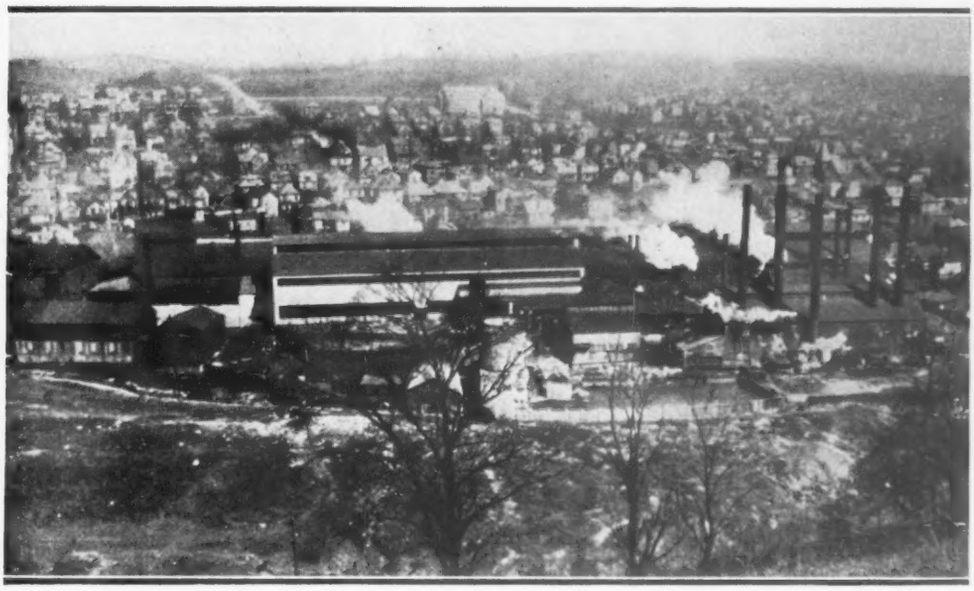
Car Wheel Grinder Features Improvements in Design

Norton Co., Worcester, Mass., has brought out a new car wheel grinder, shown in the accompanying illustration with a set of wheels in grinding position. This machine replaces an older model which has been in wide use for 25 years. It is intended for grinding new wheels to insure smoothness and concentricity with journals and also for the dressing down of old wheels to remove flat spots. The machine will handle car wheels from a minimum diameter of 20 inches, up to a maximum diameter of 44 inches, and engine truck wheels up to 36 inches in diameter. Only 4 foot 8½-inch gage standard mountings are recommended. The illustration shows work supports for standard axles, but supports for ball or roller bearings can be furnished.

Two complete grinding units are employed, one for each wheel. These are motor driven and individually controlled. The units slide on wide ways, one flat and the other V, and are reciprocated from ⅝ to 1⅛ inch at two different speeds to give even wheel wear and greater production. Dressing tools are mounted on the wheel guards. The wheels are mounted on spindles running on preloaded ball bearings. Wheels 24 x 2¾ x 5-inch are


Tanner's Vat with Paddle Wheel
Tanners' and Chemists' Drums
Rubber Lined Storage Tanks
Rubber Lined Tank Car
20 ft. Elliptical Tank
Concave Bottom Tank
Rectangular Tank with Water Tight Compartments
Heavy Plunger Tank
Tank Equipped with Self-Contained Agitator
Pressure Tank
40,000 Gallon Sprinkler Tank

Where Hauser-Stander Pickling Tanks Are Used



Cannonsburg Steel & Iron Works, Cannonsburg, Pa.

HERE is another plant where our product is used to advantage. Hauser-Stander Pickling and Acid Storage Tanks are giving good service in big and little iron and steel mills all over the country.

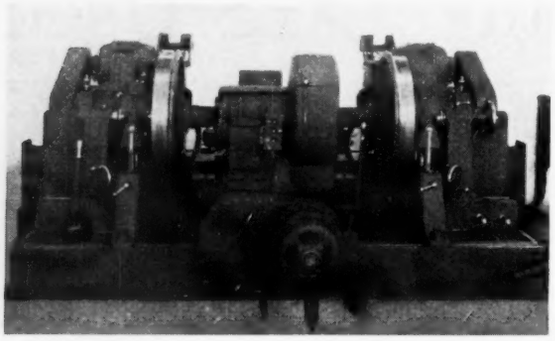
Hauser-Stander Pickling Tanks are made of Douglas Fir or Long Leaf Yellow Pine from four to twelve inches thick—depending upon size of tank and service required—plain tanks for use in connection with the Mesta Machine and extra heavy, partition tanks for the plunger type. All tie rods together with nuts and washers are of acid-resisting bronze or Monel Metal. Rubber-lined tanks are recommended for Muriatic Acid Storage.

Consult us regarding YOUR pickling problems. We design as well as manufacture and can make tanks to your order lined with lead, rubber or protective wood, or can meet any particular requirements relative to the solution you employ, its temperature, material to be pickled, stress or strain and all such important factors.

"We Win With Quality"

The Hauser-Stander Tank Co.

Cincinnati, Ohio



New car wheels are finished and old ones trued up by special grinder with dual heads which supports the work by the axles

recommended, although special guards can be provided to take wheels up to 4 inches thick. A gaging device insures equal diameters in both wheels of a pair.

Five motors are used; two of 25 horsepower each to drive the wheels, one of 10 horsepower to drive the work, one of 1½ horsepower to drive the coolant pump, and one of 3 horsepower to drive the reciprocating mechanism. All are controlled from a conveniently located pushbutton station, and there is an auxiliary control station on the loading side for starting, stopping or jogging the work while loading or unloading. The machine occupies floor space of 13 feet 8 inches x 11 feet 5 inches, and the net weight is approximately 35,000 pounds.

◆

Automatic Hopper Feeders Cut Grinding Costs

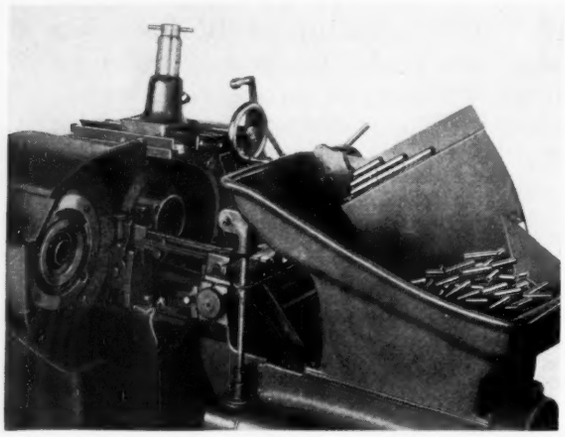
Cincinnati Grinders Inc., Cincinnati, has brought out an improved hopper for feeding work automatically to the wheels of a centerless grinder. The accompanying illustration shows a hopper mechanism of the "feed-through" type. Similar mechanisms have been designed to handle "in-feed" work. Manual feeding is eliminated and in cases where batteries of machines are used, one operator can take care of three or four machines.

Low work basins are provided to make it easy for the operator to dump in the work. Individual motor drives make it easy to install or remove the hopper units. They are easily adjusted to different sizes and the design is such that jamming is eliminated. The units are mounted on adjustable wheels which permit easy moving around the shop. Anti-friction bearings are used, wearing parts are of hardened steel and ample lubrication is provided.

Mode of Operation

The "in-feed" hopper mechanism will handle work up to 8-inch under head length, 2-inch diameter head, with ground diameter up to 1½-inch diameter. An inclosed ½-horsepower motor with pushbutton control drives a pickup plate having vertical segmental arc movement in the work basin. Each sweep of this plate selects work shoulder end up which then slides down the receiving chute to position on the work support blade. An ejector rod controls the timing of the hopper, and the same cycle also controls piece selection. The automatic feed-in cuts idle time to a minimum.

The feed-through hopper is identical except that a gravity chute takes the place of the automatic feed-in attachment. This will handle cylindrical work from ⅛ to 1½-inch diameter with minimum length slightly exceeding diameter. An adjustable tie rod keeps the hopper properly located relative to the grinder. To compensate for wheel wear and to keep the hopper in accurate alignment a cross adjustment is provided. Additional parts can be obtained to convert the in-feed hopper to the feed through type, insuring added usefulness.

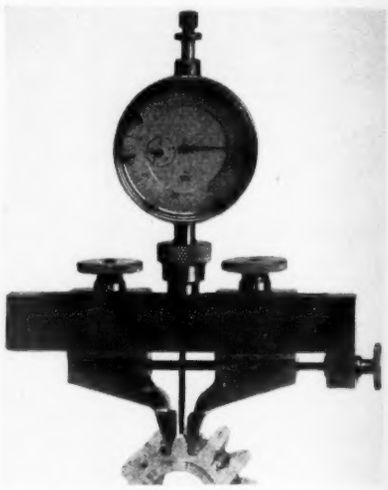


Automatic operation of centerless grinders both on plain cylindrical and shoulder work is made possible by dependable hopper feeding mechanisms

◆

Gear Tooth Comparator Has Adjustable Dial Gage

Farrel-Birmingham Co., 344 Vulcan street, Buffalo, has developed a gear tooth comparator which gives readings on a dial gage and which can be used for checking either straight or herringbone spur gears. The accompanying illustration shows the instrument in position for checking teeth of a straight gear.



Straight or helical spur gear teeth are checked by comparator

As compared to previous models, this instrument has two movable jaws and a stationary indicator spindle, which adds to the convenience of setting. The dial gage is adjustable in the holder, permitting it to be raised and lowered, thereby avoiding the necessity of changing plunger or spindle when shifting from fine to coarse pitch gears. Both jaws are changeable, consequently interchangeable jaws of different pressure angles can be supplied. Various uses of the comparator are; measuring teeth with master tooth block of corresponding size, measuring teeth with master gage block of different size, and measuring tooth wear on gears which have been in service.

Steel Rate Follows Demand Down

Industry's Morale Unimpaired, However and Effort To Firm Prices Is Renewed—American Radiator Iron Purchase Cuts Sand-Cast Stock—October Ingots Down

EXCEPT that it be on a subnormal plane, steel is in a typical November market. Production is being curtailed mildly; the railroads are proceeding with their year-end programs of equipment and track material purchases; producers seek to firm up prices to apply on approaching first quarter inquiry.

No little needed support for the industry's morale is derived from the condition of low stocks of consumers, excepting scrap, and the general impression that current prices about represent bottom and that consumers' requirements should expand beginning early in 1931.

Superficially, the increase of 57,425 tons in the unfilled tonnage of the United States Steel Corp. and the purchase of about 50,000 tons of pig iron by the American Radiator & Standard Sanitary Corp. have favorable significance, but close analysis vitiates this somewhat. Practically all the 1.6 per cent gain in the Corporation's backlog is rails, for 1931 rolling.

The American Radiator purchase took off the market most of the stock of sand-cast iron of the Woodward Iron Co., Birmingham, Ala., which is now making machine-cast iron only. The price, understood to have been several dollars under the Birmingham foundry quotation of $14, has not affected the market. Many small buyers usually follow the lead of American Radiator, and inquiry has been stimulated.

Virginian Railway has ordered 600 hopper cars, requiring 6500 tons of steel, while the Chicago & Illinois Midland is inquiring for 400 gondolas and 400 hoppers. The Pennsylvania opens bids Nov. 17 on 30,000 tons of plates, 10,000 tons of bars and 10,000 steel wheels, for car work in its own shops. About 2500 freight and 315 passenger cars are actively pending.

Chicago mills have booked about 150,000 tons of rails thus far from the Chicago & North Western, Great Northern, Santa Fe, Pere Marquette, Northern Pacific and Union Pacific, appraising this as 25-30 per cent of 1931 needs of western roads. An inquiry from the Grand Trunk is near.

Structural awards, featured by 12,700 tons for subways in New York, totaled 30,128 tons this week, compared with 38,599 tons last week and 33,215 tons a year ago. For 1930 to date awards are 1,649,308 tons; a year ago 1,918,214 tons. New inquiry totals 45,000 tons, exclusive of 35,000 tons for Chicago subways, which may not be placed for a year. At New York, 35,000 tons for elevated roadways and 14,800 tons for subways are active.

As noted some time ago, producers of plates, shapes and bars are endeavoring to stand on 1.60c, Pittsburgh, the remainder of the quarter, limiting first-quarter coverage at these levels to specific commitments. Galvanized sheets have broken through 3.00c, Pittsburgh, for quotation purposes. Nails to the merchant trade are more generally $2, Pittsburgh-Cleveland. Sheets, bars, alloy steels, strip and wire continue sluggish due to low automotive needs.

Last week's report showing October pig iron production down to 69,851 gross tons daily and 49.6 per cent of capacity is supplemented by a similar revelation concerning steel ingots in October. The daily rate of 100,756 gross tons, compared with 110,307 tons in September and the lowest since late 1924, indicated an operating rate of 50.32 per cent.

On the basis of a daily average of 136,193 tons thus far, 1930 will be a 42,356,023-ton ingot year. This compares poorly with the record 54,312,279 tons of 1929 but fairly favorably with the 49,865,185 tons of 1928 and 43,397,743 tons of 1927.

Steelmaking operations this week are slightly lower at 44-46 per cent, compared with 45-48 last week and 49 two weeks ago. Youngstown is at 50 per cent this week, off 2 points; Chicago is fractionally under last week's 50; Pittsburgh is 45-50 compared with 50 last week; Buffalo is down from 54 to 48; Birmingham is steady at 45, while Cleveland has improved from 21 per cent to 35.

STEEL's market composite is unchanged this week at $31.98, after declining steadily since the last week of August.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (Nov. 12, 1930)	**$31.98**
Last week (Nov. 5, 1930)	**31.98**
One month ago (October, 1930)	**32.26**
Three months ago (August, 1930)	**32.99**
One year ago (November 1929)	**36.03**
Ten years ago (November 1920)	**63.75**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Nov. 12, 1930	Oct. 1930	Aug. 1930	Nov. 1929
PIG IRON				
Bessemer, del. Pittsburgh	$18.76	19.36	20.26	20.76
Basic, valley	17.00	17.00	18.00	18.50
Basic, eastern del. eastern Pa.	17.50	17.50	18.00	19.75
No. 2 foundry, del. Pittsburgh	18.26	18.46	19.26	19.76
No. 2 foundry, Chicago	17.50	17.50	17.50	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del. Phila.	19.26	19.26	19.76	22.26
Malleable, valley	17.50	17.80	18.50	19.00
Malleable, Chicago	17.50	17.50	17.50	20.00
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.93	18.63	19.13
Ferromanganese, del. Pittsburgh	103.79	103.79	103.79	109.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.60	2.60	2.50	2.65
Connellsville foundry, ovens	3.50	3.50	3.50	3.55
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	31.00	31.00	31.00	35.00
Sheets bars, open-hearth, Pitts.	31.00	31.00	31.00	35.00
Billets, open-hearth, Pittsburgh	31.00	31.00	31.00	35.00
Wire rods, Pittsburgh	36.00	36.00	36.00	40.00

	Nov. 12, 1930	Oct. 1930	Aug. 1930	Nov. 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.65	1.90
Steel bars, Chicago	1.70	1.70	1.75	2.00
Steel bars, Philadelphia	1.89	1.89	1.94	2.22
Iron bars, Chicago	1.70	1.70	1.75	2.00
Shapes, Pittsburgh	1.60	1.60	1.65	1.90
Shapes, Philadelphia	1.66	1.76	1.66	1.91
Shapes, Chicago	1.70	1.70	1.75	2.00
Tank plates, Pittsburgh	1.60	1.60	1.65	1.90
Tank plates, Philadelphia	1.80½	1.805	1.805	2.10
Tank plates, Chicago	1.70	1.70	1.75	2.00
Sheets, blue anl., No. 13, Pitts.	2.05	2.15	2.15	2.35
Sheets, black, No. 24, Pitts.	2.35	2.40	2.50	2.75
Sheets, gal., No. 24, Pittsburgh	3.00	3.00	3.10	3.45
Sheets, black, No. 24, Chicago	2.60	2.60	2.60	2.95
Sheets, blue anl., No. 13, Chicago	2.30	2.30	2.30	2.50
Sheets, galvanized, No. 24, Chi.	3.15	3.20	3.20	3.65
Plain wire, Pittsburgh	2.30	2.30	2.30	2.40
Wire nails, Pittsburgh	1.95	2.00	2.05	2.40
Tin plate, per base box, Pitts.	5.00	5.00	5.25	5.35
SCRAP				
Heavy melting steel, Pitts.	13.25	14.80	15.20	16.30
Heavy melting steel, eastern Pa.	11.50	12.00	12.625	15.125
Heavy melting steel, Chicago	10.50	11.55	12.00	13.05
No. 1 wrought, eastern Pa.	13.50	14.25	14.25	16.25
No. 1 wrought, Chicago	10.00	10.95	11.25	13.85
Rails for rolling, Chicago	13.00	14.10	14.50	15.30

Sheets

Operations Hold but Order Gains Are Spotty—Prices Unchanged, Lack Strength

SHEET PRICES, PAGE 79

Pittsburgh—Sheet business remains at a low ebb. Orders from all leading consumers represent only early needs, which are light. Operations of stove and range, farm implement and electrical equipment industries lack improvement. Sheet prices, while not strong, are little changed. Black sheets continue 2.35c to 2.45c. Galvanized usually are 3.00c but 2.95c and 2.90c are appearing on some tonnages. Blue annealed plates continue 1.90c to 2.00c with No. 13 gage sheets 2.05c to 2.15c. Autobody are nominally 3.40c to 3.50c. Mill operations hold at 40 to 45 per cent.

New York—A substantial gain is noted in sheet business, indicating the belief in some quarters at least that prices are at bottom. Galvanized sheets are 2.95c to 3.00c, Pittsburgh; black 2.35c to 2.40c, Pittsburgh, though the bulk of business appeared to be going at the inside figure; blue annealed, 2.05c, Pittsburgh, subject to occasional shading of $1 a ton; and blue annealed plates 1.90c.

Philadelphia — Sheet buying is slightly better though prices continue easy. Blue annealed plates are 1.90c to 2.00c, Pittsburgh; blue annealed sheets 2.05 to 2.15; common black, 2.35 to 2.45, with occasional concessions and galvanized is 2.90 to 3.00c.

Cleveland—On black sheets 2.35c, Pittsburgh rules; galvanized 3.00c; full finished 3.40c to 3.50c; metal furniture 3.60c, blue annealed 1.80c to 1.90c on No. 10 gage, 1.95c to 2.05c for No. 13 gage from continuous mills, higher levels applying on jobbing mill sizes and widths. Other makers are considering the new extras as announced by American Rolling Mill Co. Sheet improvement still is future. Specifications are fairly steady on the basis of late last month takings by large consumers such as Fisher Body Co., the local unit being now on the basis of 15,000 bodies weekly for Chevrolet. Ford Motor Co., and other automotive interests are slackening, as are miscellaneous consumers in scattered areas. A Canton, O., user of electrical sheets bought 250 tons and occasional inquiries from a carload up of that grade are issued. Stove, refrigerator, advertising sign and similar manufacturers all are slack. One prominent Ohio producer claims October was the best month of the year from the standpoint of bookings and shipments.

Cincinnati—Diversified demand is noted by sheet mills but individual orders, although numerically satisfactory, are light.

Chicago—Due largely to a few low inventories, specifications for black and blue annealed sheets gained moderately. Mill operations are 40 to 50 per cent. Weakness in black sheets continues, but producers are unwilling to authorize a spread of 2.45c to 2.55c for No. 24 gage. Galvanized sheets are now quoted 3.10c, mills, for No. 24 gage, instead of a spread.

St. Louis—Producers and distributors of sheets here report a moderate stiffening in prices. Latest business has been at full list figures. Consumer inventories are universally light, and sellers are looking for increased ordering during the next few weeks for delivery after Jan. 1. Stocks in producers' hands also are moderate. Galvanized sheets are moving in slightly larger volume to the country. Demand for plates is quiet, with the oil and car building industries inactive.

Show Tubing «Movie»

New York—A 5-reel sound picture showing the manufacture of steel tubing and pipe by Spang-Chalfant & Co., Pittsburgh, was shown here Nov. 7 in the Miles projection rooms, 729 Seventh avenue.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.35c to 2.45c
Philadelphia, delivered	2.64c to 2.74c
Gary, Indiana Harbor	2.55c
Chicago, delivered	2.60c
Birmingham, base	2.60c
St. Louis, del.	2.80½c

TIN MILL BLACK, NO. 28

Pittsburgh, base	2.70c
Gary, base	2.80c

GALVANIZED NO. 24

Pittsburgh, base	2.95c to 3.00c
Philadelphia, delivered	3.19c to 3.29c
Gary Indiana Harbor	3.10c
Chicago, delivered	3.15c
Birmingham, base	3.15c
St. Louis, del.	3.45½c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.05c to 2.15c
Chicago, district mills	2.25c
Chicago, delivered	2.30c
St. Louis, delivered	2.50½c
Philadelphia, delivered	2.34c to 2.44c
Birmingham	2.30c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	1.90c to 2.00c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.19c to 2.29c
St. Louis, delivered	2.35½c
Birmingham	2.15c

AUTOMOBILE NO. 20

Pittsburgh base	3.40c to 3.50c

FURNITURE NO. 24

Pittsburgh	3.60c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

Tin plate, coke base	5.00
Gary, Ind., base 10 cents higher.	
Long ternes, 24, primes	3.65c
Long ternes, 24, assorted	3.55c
Long ternes, 24, unassorted	3.45c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$1.95 and 2.00
Cement coated nails	1.95 and 2.00
Galvanized nails	3.95 and 4.00

(Per pound)

Polished staples	2.40c and 2.45c
Galvanized staples	2.65c and 2.70c
Barbed wire, gal.	2.60c and 2.65c
Annealed fence wire	2.10c and 2.15c
Galvanized wire	2.55c and 2.60c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.53½c
Nails, delivered Detroit	$2.38½

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
**7/16-inch and smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Steel Plates

Base, Pittsburgh	1.60c
Philadelphia, del.	1.80½c
New York, del.	1.88c
Boston, del.	2.00c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.78½c to 1.88½c
Lackawanna, N. Y., base	1.70c
Birmingham, base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.05c to 2.15c
St. Louis, del.	2.00½c

Structural Shapes

Base, Pittsburgh	1.60c
Philadelphia, del.	1.66c to 1.76c
New York, del.	1.75½c to 1.85½c
Boston, del.	1.88½c to 1.98½c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.83½c to 1.88½c
Lackawanna, N. Y., base	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.15c to 2.25c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c to 1.75c
Birmingham, base	1.75c to 1.80c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.25c to 2.35c
Cleve. base, local del.	1.65c
Do, outside delivery	1.60c
Philadelphia, del.	1.89c to 1.94c
New York, delivered	1.93c to 1.98c
Boston, delivered	2.00c to 2.05c
Pittsburgh, cold finish	1.75c to 1.80c
Pittsburgh, forg. qual.	1.85c to 1.90c

RAIL STEEL

Chicago Heights	1.65c
Eastern mills	1.65c

IRON

Chicago, base	1.70c
New York, delivered	1.93c to 1.98c
Philadelphia, delivered	1.89c to 1.94c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c to 2.00c
Stock lengths, mill	1.65c to 1.75c
Chi. billet, over 200 tons	1.70c to 1.85c
30 to 200 tons	2.00c
Under 30 tons	2.45c to 2.85c
Chi., rail steel, over 30 tons	1.50c to 1.60c
Under 30 tons	2.10c to 2.50c
Philadelphia, cut lengths	2.04c to 2.09c

Cold-Finished Steel

Base Pitts., Chi., Buff., Cleve.

Bars	2.00c to 2.10c
Shafting	2.10c
Do, turned and ground	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates 31c; bars 28c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni	1.05
2100	0.55	5100 .80-1.10 Cr.	0.45
2300	1.50	5100 Chr. spring	0.20
2500	2.25	6100 bars	1.20
3100	0.55	6100 Spring	0.95
3200	1.35	Chr., Ni., Van.	1.50
3300	3.80	Carbon Van.	0.95
3400	3.20	9250 (flats)	0.25
4100 .15 to .25 Mo.	0.50	9250 (rds., sq.)	0.50
4600.20 30 mo.			

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.70c to 1.75c
Hot strip 6 1/16 to 24-in. Pitts.	1.60c to 1.65c
Hot strip, bands 6 in. and under, Chicago	1.80c
Do. 6 1/16 to 24 in.	1.70c
Cooperage hoop, Pitts.	1.90c to 2.00c
Do, Chicago	2.00c to 2.10c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.35c to 2.45c
Worcester, 3 tons, over	2.50c to 2.60c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes boat, barge, Pitts.	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00 to 41.50

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off
Tire bolts, 60, 10 and 10 off.
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 off

***HEXAGON CAP SCREWS**

Milled ..... 80-10-5 off
Upset 1 in. diam. and smaller ..... 80-10 off

***SQUARE HEAD SET SCREWS**

Milled ..... 85-5 off
Upset 1 in. and smaller ..... 80-10-5 off
*Discounts dated Jan. 23, 1930.

Cut Nails, Chain, Piling

Cut nails, c.l., mills	2.45c
Do, less carloads	2.55c
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	2.00c

Bars

Minimum Price Announcement Is Help to Steadiness—Demand Shows No Marked Improvement

BAR PRICES, PAGE 79

Chicago — Bar mills continue their lead among finishing departments, with operations about 60 per cent. One producer of bars and other finished products reports a general increase in bookings and heavier inquiries, due in part to fourth quarter contracts being entered and apparently to the pinch of low inventories among miscellaneous buyers. Not counting rails, this producer had the heaviest bookings in 90 days. With track tonnage, comparable weekly figures would go back nearly six months. Automotive parts buyers are taking slightly more tonnage. Soft steel bars are 1.70c, base. Producers claim they obtain 1.75c to 1.80c for odd-lot and mixed carload orders on light individual tonnage.

New York—The steel bar market at 1.60c to 1.75c, Pittsburgh, is firmer. The Carnegie Steel Co. has announced that 1.60c is its minimum and other sellers are indicating the same minimum. Meanwhile, business remains sluggish, with deliveries ranging one to three weeks.

Philadelphia—Steel bar deman is slow in this market and prices are unchanged, no test being applied to reveal the tendency.

Pittsburgh—Announcement by the Carnegie Steel Co. of a minimum price of 1.60c, Pittsburgh, on current steel bar business is intended to forestall attempts of consumers to seek lower prices. The market usually is a flat 1.60c with 1.65c applied on less desirable specifications. Incoming tonnage is steady but improvement is lacking over activity of recent weeks.

Youngstown, O.—Important independent steel bar makers in this district have followed the Carnegie Steel Co. in quoting 1.60c, Pittsburgh, for bars, plates and shapes. Shading of 1.65c had been noted in various districts and the effort on the part of the principal bar rollers to stabilize the markets has been accepted in good part by even those who had not been participating in the price-cutting up to this time. Contracts for first quarter at 1.60c are being refused, although it is known that some tonnages for definte delivery dates in January have been sold by independent mills in this district. But general contracts as "coverage" for first quarter are not being encouraged. In fact, they are being definitely discouraged by leading mills here.

Cleveland—Merchant steel bar activity is fragmentary. Forge shops and other users are purposely keeping inventories subnormal. One shop ordinarily maintaining a 3500-ton stock is now down to 500 tons. Another, in order to clean up its inventory, has utilized 2-inch round material for a job for which ordinarily 1¼-inch rounds would be ordered. All this is causing a dearth of specifications for bar mills. The 1.60c, Cleveland, price is upheld with 1.65c, Cleveland, the going figure for local delivery. Some mills have taken a stand on an absolute minimum of 1.60c, Pittsburgh, for immediate business.

Pig Iron Is Only Import

Philadelphia—Imports received at this port during the week ending Nov. 8 comprised 2882 tons pig iron from British India.

Cold-Finished Demand Shows Further Tapering

Cold Finished Prices, Page 79

Pittsburgh — Cold-finished steel bar tonnage is slightly smaller than during recent weeks, with demand from the automotive industry off since the middle of October and requirements of farm implement builders lacking improvement. Producers continue to quote 2.10c, but tonnage is insufficient to provide a test of the market.

Cleveland—Nothwithstanding the strong efforts to hold the market on cold-finished bars at 2.10c, Cleveland, some have gone to 2.00c on desirable business. This character of buying, however, is scarce. All consumers being anxious to pare their inventories, are ordering close. Automotive specifications are scarce.

Owosso Mfg. Co., Owosso, Mich., is distributing its thirtieth annual profitsharing fund, $15,992 being divided among 115 employes.

Plates

Slow Demand Met in Most Market Areas, with Some Tank and Car Building Tonnage Up

PLATE PRICES, PAGE 79

New York—Plates remain steady at 1.70c, Coatesville, Pa., with some less than carload business going at 1.75c. Trading, generally, is rather slack. An exception to the dullness is the 30,000 tons of plates for the Pennsylvania railroad, most of which is presumably for the freight cars to be built in company shops. The Erie will close bids late this month on a large barge, to be equipped with a 50-ton steam hoist. Tank and pipe work continues light.

Philadelphia—Demand for plates has subsided somewhat recently and eastern mills are operating at 40 to 50 per cent as a rule. The usual price is 1.70c, Coatesville, subject to concessions on certain special business.

Pittsburgh—New plate tonnage is slow to develop. Barge inquiry is slightly more active, 1250 tons of plates and shapes being involved in 11 hulls on which bids close Nov. 25. Coal cars let by the Virginian railroad will require 6500 tons of bars, shapes and plates. Tank work continues dull. The market usually continues 1.60c, Pittsburgh, which figure has been reaffirmed as a minimum by the leading interest.

Cleveland—In addition to occasional small quantities of plates for tanks, and miscellaneous purposes taking up to a carload or 100 tons at a time, an occasional shipbuilding order will be placed for several hundred tons. One now is being figured, a lake steamer, which will take approximately 5000 tons of plates. M. A. Hanna Co. division, National Steel Corp., may add to its fleet of coal and ore boats. Plates are held at 1.60c, Pittsburgh, that figure being announced as absolute minimum by some producers, replacing shaded quotations which had prevailed.

Chicago—Two tank storage projects, one for Oklahoma and another for Texas, figure about 3000 tons of plates. Oil tankage inquiry is estimated to be 10,000 to 15,000 tons despite scarcity of active projects in the Oklahoma oil fields. Further pipe line projects are slow in materializ-

ing. Plate prices are based on 1.70c, mills.

Contracts Placed

1000 tons, sheet piling, Market street subway, Philadelphia, to Carnegie Steel Co., Pittsburgh, and Bethlehem Steel Co., Bethlehem, Pa.; Dravo Contracting Co., Pittsburgh, general contractor.

300 tons, digesters and tanks for pulp mill, Weyerhaeuser Timber Co., Longview, Wash., to Willamette Iron & Steel Works, Portland, Oreg.

200 tons, auto license plates, Washington, to United States Steel Products Co., Seattle.

150 tons, cell work for jail, Los Angeles, to Brombacher Iron Works, Los Angeles.

Contracts Pending

30,000 tons, Pennsylvania railroad; bids opened Nov. 17.

2400 tons, gas holder, Philadelphia Electric Co., Philadelphia.

750 tons, 10 barges, United States engineers, Rock Island, Ill.; bids close Nov. 25.

500 tons, wharf boat, Peoria, Ill.; bids close Nov. 25.

400 to 500 tons, barge for Erie railroad, bids asked.

160 tons, sheet piling, Higbee Co. department store, Cleveland; general contract to Spencer-White & Prentis Co., Cleveland.

Tin Plate Being Booked for 1931 Requirements

Tin Plate Prices, Page 79

Pittsburgh — Tin mill operations are unchanged at around 45 per cent, following several weeks of declining schedules. Producers are engaged mostly on general line can material and on anticipated tonnage for 1931. Some tin plate, however, still is being produced for packers cans for the current season. Occasional contracts are being entered for the first half of next year with the market continuing $5, Pittsburgh, per base box.

New York—While some large consumers continue to hold off, a fairly good tonnage of tin plate has been contracted for first half at $5 per base box, Pittsburgh.

Sustains Pig Iron Rates

Washington—Rates on pig iron, in carloads, from points in Alabama and Tennessee to Indianapolis, have not been found unreasonable or unduly prejudicial in a proposed report prepared for the interstate commerce commission by Examiner Harris Fleming in the case of the Federal Foundry Co. against the Alabama Great Southern railroad. Mr. Fleming recommends that the complaint be dismissed.

Railroads

Virginian Awards 600 Coal Cars—Other Demand Light—Rails, Fastenings Quiet

TRACK MATERIAL PRICES, PAGE 79

Chicago—Estimates are that only 25 to 30 per cent of the actual 1931 rail tonnage for western roads has been placed. Grand Trunk is understood to be preparing an inquiry for both Canadian and United States lines. Nearly 150,000 tons, including Chicago & North Western, Great Northern, Santa Fe, Pere Marquette, North Pacific, and Union Pacific rails, have just been entered on mill books. It is not definitely known how much of this tonnage will be scheduled for December rolling. Track fastenings bookings totaled 4000 tons. Chicago is placing six month's supply of finished steel for car repairs.

Finishing mills expect about 20,000 tons of steel for the 1500 cars on inquiry from the Santa Fe, Chicago & Illinois. Midland is inquiring for 400 gondolas and 400 hoppers.

New York—Fresh car demand is light, with eastern builders centering their attention largely on the 600 cars for the Virginian railway. Present activity includes 20 caboose cars for the Reading, awarded its own shops.

Approximately 2500 freight and 315 passenger cars are actively pending.

Philadelphia—Reading Co. is inquiring for a moderate tonnage of track accessories. Pennsylvania railroad opens bids Nov. 17 on car repair material involving 30,000 tons of plates, 10,000 tons of bars, 2000 tons of shapes, 10,000 wheels, 500 axles and other material. This is in addition to the material about 40,000 tons not yet placed for 1500 gondolas, awarded to own shops as noted last week.

Pittsburgh—Virginian railway placed 600 coal cars on its recent inquiry with Virginia Bridge & Iron Co. This award will require 6500 tons of bars, shapes, and plates. New inquiry for car rails and fastenings is quiet and little tonnage is pending.

Birmingham, Ala.—Rail mills and car shops are ready for immediate resumption. Announcements of early operation are anticipated. Steady production probably will be started shortly after Jan. 1, 1931.

Car Orders Placed

Atchison, Topeka & Santa Fe, 10 horse express cars, to Pullman Car & Mfg. Corp., Pullman, Ill.

Reading Co., 20 caboose cars, to own shops.

Virginian railway, 600 coal cars, to Virginia Bridge & Iron Co., Roanoke, Va.; old trucks to be used.

Locomotives Placed

Great Northern, 10 locomotives completed, with three more to be finished by the end of the year; work on 12 locomotives, originally planned for this year, will be carried into 1931.

Car Orders Pending

Caloric Co., 10 50-ton tank cars.

Chicago & Illinois Midland, 400 gondolas and 400 hoppers.

Denver & Rio Grande Western, two dining cars.

Houdaille-Hershey To Buy Muskegon Specialties

Houdaille-Hershey Corp., shock absorbers, bumpers, ignition locks, and other motor accessories, with plants at Chicago, North Chicago, and Decatur, Ill., Buffalo, Detroit, and Oshawa, Canada, proposes to acquire the Muskegon Motor Specialties Co., Muskegon, Mich., and its subsidiary, the Jackson Motor Shaft Co., Jackson, Mich., according to Claire L. Barnes, president of Houdaille-Hershey.

No public financing is to be done. Common stockholders of the Muskegon company are offered one share of class B stock of Houdaille-Hershey Corp. for each share of Muskegon Motor Specialties Co., according to the plan. The Muskegon company was organized in 1909 and has become an important producer of camshafts.

Orders New Scrap Rates

Washington—Interstate commerce commission has modified a previous decision that rates on scrap steel and iron, in carloads, from central and western trunk line territory to Kokomo, Ind., are unreasonable, and has prescribed new rates.

The commission has found not justified proposed rates from certain points in central territory to Kokomo and has canceled suspended schedules. The decisions are in the case of the Continental Steel Corp. against the Akron, Canton & Youngstown railroad.

Structural Shapes

Engineering Projects in Chicago, New York, Run Total of Inquiries Above 100,000 Tons—Lettings, Topped by New York Subway, 12,700 Tons, Total 30,128 Tons

STRUCTURAL SHAPE PRICES, PAGE 79

New York—Lettings and inquiry are heavier, award of 12,700 tons for a subway leading. Prices are unsteady. Another subway section, 5100 tons, is readvertised for Nov. 25. A third, 9700 tons, is also out. Bids open Nov. 18 on section three West Side highway, 15,000 tons. Action on this section by New York Central also means early letting by the Borough of Manhattan of section two, 20,000 tons. New inquiry is on the increase.

Structural steel lettings in October totaled 30,948 tons, compared with 27,166 tons in September, according to the Structural Steel Board of Trade. In October, 1929, was the record month, 85,699 tons. Engineering projects are not included. Comparisons for the last three years for 10 months follow:

Month	1930 Tons	1929 Tons	1928 Tons
Jan.	34,951	27,626	30,204
Feb.	38,535	24,609	24,850
March	28,943	72,003	32,299
April	26,726	37,543	28,214
May	58,431	34,575	46,002
June	49,943	47,299	38,600
July	61,940	57,775	57,147
Aug.	61,689	74,566	43,305
Sept.	27,166	56,155	39,846
Oct.	30,948	85,699	50,264
Total (10 mos.)	419,272	517,850	390,731

Worcester, Mass.—The only award last week was 172 tons for the state normal school, Worcester, Mass. The market is quiet.

Boston—Structural steel orders pick up slowly. Last week about 1200 tons in several awards was placed. A textile plant at Saylesville, R. I., 360 tons, was the largest. Little more than 300 tons is pending.

Philadelphia—Shape demand is somewhat lower. Eastern mills now operate 50 to 55 per cent. The usual price range is 1.60c to 1.70c, base, nearest eastern mill, subject to exceptions in certain business.

Buffalo—Bids close Nov. 12 in New York on the 2200-ton viaduct at Lackawanna, N. Y. This is the largest structural item pending here. October bookings by fabricators in this section were disappointing.

Pittsburgh—Structural business is less active. The Ohio River bridges at Evansville, Ind., and Carroll, Ky., involving 7800 and 4770 tons, respectively are still pending. American Bridge Co. is low. Both new inquiries and awards in this district involve only small lots. Plain shapes have been reaffirmed at 1.60c, Pittsburgh, by the leading interest.

Cleveland—Some structural work on architects' boards a few weeks ago is being withdrawn and the projects indefinitely postponed. Included is considerable grade elimination work for Erie railroad. Some bond issues were voted upon favorably last Tuesday and this is expected to create considerable tonnage next spring and summer. In the meantime, inquiries are scattered and for small amounts and awards are practically absent. Shapes are 1.60c, Pittsburgh.

Chicago—Structural mills shared in the week's increased bookings of finished steel. Mill operations remain about 50 per cent. Base quotations for plain material are 1.70c, mills. Awards total about 1500 tons. Inquiries, including Great Northern's steel requirements for 1931, are 7000 tons, while about 7000 tons also is on inquiry for the Pacific Coast.

It is reported here that an important tonnage of structural steel is out for a high tension transmission line in the St. Louis district.

Contracts Placed

12,700 tons, subway, route 108, section 6, Queens, N. Y., to McClintic-Marshall Co., Pittsburgh; George H. Flynn Inc., New York, general contractor.

2800 tons, Market street subway, Philadelphia, to McClintic-Marshall Co., Pittsburgh; Dravo Contracting Co., Pittsburgh, general contractor; this was listed in awards of Nov. 6

Awards Compared

	Tons
Awards this week	**30,128**
Awards last week	**38,599**
Awards two weeks ago	**28,873**
Awards this week in 1929	**33,215**
Av. weekly awards, 1930	**35,855**
Av. weekly awards, 1929	**42,213**
Av. weekly awards, Oct.	**37,575**
Tot. awards to date, 1929	**1,918,214**
Tot. awards to date, 1930	**1,649,308**

STEEL, 2590 tons for Market street bridge, Pittsburgh.

2500 tons, Pennsylvania avenue improvements, Philadelphia, to Phoenix Bridge Co., Phoenixville, Pa.; George F. Dobbin, general contractor.

1500 tons, Ironbound apartments, Prudential Insurance Co., Newark, N. J., to Hay Foundry & Iron Works, Newark; R. A. Howie Jr., general contractor.

1350 tons, apartment hotel, 400 East Fifty-second street, New York, to unstated fabricator; Gresham Construction Co., general contractor.

1050 tons, Balaban & Katz theater, Sixty-third street, Chicago, to Gage Structural tSeel Co., Chicago.

1000 tons, Federal building, Tulsa, Okla., to Rochester Bridge Co., Rochester, Ind.; Charles Weitz' Sons, Des Moines, Iowa, general contractors.

1000 tons, bridge over Grand river, Paris, Ont., to Standard Steel Construction Co., Port Colbourne, Ont.

1000 tons, apartment, East Fifty-second street, New York, to Easton Structural Steel Co., Easton, Pa.

650 tons, power house, Rock Island, Wash., to Milwaukee Bridge Co.; Stone & Webster Inc., Boston, engineers; reported last week as 550 tons as going to unstated fabricator.

600 tons, miscellaneous work in state of Washington for Stone & Webster Inc., to Milwaukee Bridge Co., Milwaukee.

450 tons, Michigan highway bridges, to Whitehead & Kales Co., Detroit.

425 tons, school, 24 Holly avenue, Queens, N. Y., to Easton Structural Steel Co., Easton, Pa.

400 tons, Bloom township high school, Chicago Heights, Ill., to unstated fabricator.

400 tons, subway, Chicago, Milwaukee, St. Paul & Pacific railroad, Evanston, Ill., to Worden-Allen Co., Chicago.

360 tons, textile finishing plant, Saylesville, R. I., to James H. Tower Iron Works, Providence, R. I.

320 tons, two bridges, Maine Central railroad in Maine, to Phoenix Bridge Co., Phoenixville, Pa.

300 tons, state highway bridge, Middletown, N. Y., to American Bridge Co., New York.

300 tons, theater, Aurora, Ill., to Gage Structural Steel Co., Chicago.

275 tons, bridges for Minnesota highway department, to American Bridge Co., Chicago.

270 tons, apartment, Green street, San Francisco, to McClintic-Marshall Co., San Francisco.

250 tons, graduate building, University of Chicago, Chicago, to Union Iron Works, Chicago.

246 tons, school for Jamaica Plain district, Boston, to New England Structural Co., Boston.

225 tons, monastery, Hollywood avenue, Bronx, N. Y., to Kues Bros. Iron Works, Bronx; H. A. Harris Co., general contractor.

210 tons, 6-story apartment, Polk avenue, Jackson Heights, Queens, N. Y., to Claremont Iron Works, Bronx, N. Y.

200 tons, apartment, Ocean avenue, Brooklyn, N. Y., to City Iron Works, Brooklyn.

200 tons, apartment, Jackson Heights, West Eighty-fourth street, Queens, N. Y., to Empire Architectural Iron Works, Bronx, N. Y.

180 tons, apartment, East Eighteenth street, Brooklyn, N. Y., to Gaynor & Rosenbloom, Brooklyn.

172 tons, state normal school, Worcester, Mass., to Eastern Bridge & Structural Co., Worcester, Mass.

160 tons, 6-story apartment, Lenox road, Brooklyn, N. Y., to City Iron Works, Brooklyn.

150 tons, apartment, Brynmawr, Pa., to Kalman Steel Co., Chicago.

150 tons, highway bridge, Fort Worth, Tex., to Virginia Bridge & Iron Co., Roanoke, Va.

150 tons, National Guard administration building, Philadelphia, to McClintic-Marshall Co., Pittsburgh.

150 tons, 6-story apartment and garage, White Plains, N. Y., to Claremont Iron Works, Bronx, N. Y.

135 tons, bridge, Attleboro, Mass., to Boston Bridge Works Inc., Boston.

125 tons, clubhouse and stores, Torrington, Conn., to Yonkers, N. Y., Iron Works; joists to McClintic-Marshall Co., Pittsburgh; Charles Margotta general contractor.

120 tons, plant addition, Century Electric Co., St. Louis, to Superior Structural Steel Co., St. Louis.

120 tons, 2-story private school, Englewood, N. J., to Maxwell Spiro & Co., Jersey City, N. J.

100 tons, Twelfth street school, Philadelphia, Robinson Iron & Steel Co., Philadelphia.

100 tons, bakery, Middletown, N. Y., to McClintic-Marshall Co., Pittsburgh, for Buffalo shop.

Contracts Pending

9700 tons, subway, ruote 108, section 9, Queens, N. Y., tonnage previously reported pending in STEEL, Oct. 23, now being advertised for closing bids, Nov. 21.

5100 tons, subway, route 107, section 8, Lafayette street, Brooklyn, N. Y.; bids taken Sept. 26, rejected; to be readvertised, bids closing Nov. 25.

4000 tons, underframes for 600 cars for Pacific Fruit Express, San Francisco; bids received.

4000 tons, Seattle assembly plant, Ford Motor Co., Detroit; bids Nov. 17.

3900 tons, building, First National bank, Oklahoma City, Okla.

2200 tons, grade crossing elimination, New York Central, Lackawanna, N. Y.; bids close Nov. 12 at New York.

2000 tons, Pennsylvania railroad; bids Nov. 17.

2000 tons, 34-story apartment hotel, Hampshire house, formerly known as Hotel Meurice, Central Park south, between Sixth and Seventh avenues, New York; excavation started by H. K. Ferguson Co., Cleveland; steel to be awarded this week.

1700 tons, 1931 bridge and miscellaneous requirements for Great Northern railroad.

1500 tons, state highway bridge, Kittanning, Pa.

1300 tons, auditorium at Pasadena, Calif.

1200 tons, University bridge approaches, Seattle; plans being prepared and bonds authorized.

1000 tons, estimated, Y. M. C. A. branch building, Harper and Cadillac avenues, Detroit; bids received Nov. 5; Smith, Hinchman & Grylls, Detroit, architects.

900 tons, bank building, Phoenix, Ariz.

800 tons, Toledo, O. art museum.

750 tons, bridge work for Iowa highway commission.

700 tons, post office, Camden, N. J.

650 tons, municipal building, Pasadena, Calif.

500 tons, government building at Rio Sonora, Mexico.

500 tons, viaduct, Union Pacific railroad, Omaha, Nebr.

500 tons, 8-story Y.M.C.A. building, Toledo, O.

500 tons, subway, Canardiere street, Quebec, Que., for Canadian National railway.

450 tons, junior high school, Baltimore.

350 tons, state highway bridge, Farmers' Ford, Md.

350 tons, state highway bridge, Frederick, Md.

300 tons, Puget Sound navy yard warehouse; bids Nov. 20.

250 tons, state highway bridge, Indiana county, Pa.

250 tons, nine small buildings, Paragon Refining Co., Toledo, O.

200 tons, two state bridges at Palmer and Monson, Mass.

200 tons, Snoqualmie river bridge, Washington; bids Nov. 25.

140 tons, breakwater for Lincoln Park board, Montrose avenue, Chicago; former bids rejected.

131 tons, Jewish home, Providence, R. I.

100 tons, post office, Harrodsburg, Ky.; Fanning & Sweeney, Greensboro, N. C., low on general contract, $62,200.

100 tons, plant addition at Falconbridge, Ont., for Falconbridge Nickel Mines Ltd., Toronto, Ont.

100 tons, subway under New York Central railroad tracks, Asbury Chapel road, Erie, Pa.; general contract to Walsh Construction Co., Buffalo, on its bid of $65,548.

Unstated tonnage, office building at LaSalle and Adams streets, Chicago, for Field estate.

Unstated tonnage, 15 to 20 bridge and road projects for Arkansas highway commission; bids Nov. 14.

Concrete Bars

Award Total Declines—Larger Lettings Fewer—Two 900-Ton Lots Top List—Pending Work Declines in Most Sections—New York Subways Total High

REINFORCING BAR PRICES, PAGE 79

Chicago—Awards totaled about 1000 tons, including a 300-ton project for Milwaukee, and a 300-ton school at Gary, Ind. Public Service Co. of Northern Illinois will start work soon on a plant addition at Waukegan, Ill. A minimum of 1.80c is quoted for billet reinforcing bars. A 150-ton school is pending at Hammond, Ind., and tonnage is being estimated for the Wendell Phillips high school, Chicago, several hundred tons. October building permits for Chicago decreased 71 per cent from last year.

Boston—No round tonnage contracts for concrete work were placed last week. Small lots aggregate about 200 tons. Little if any figuring of work is in progress. Price competition weakens bidding on the few pending projects which makes them slow to reach contract stage.

Awards Compared

	Tons
Awards this week	**4,582**
Awards last week	**8,211**
Awards two weeks ago	**11,278**
Awards this week in 1929	**3,810**
Av. weekly awards, 1929	**5,849**
Av. weekly awards, 1930	**7,076**
Average weekly awards Oct.	**8,612**
Total awards to date, 1929	**281,034**
Total awards to date, 1930	**325,517**

New York—Concrete reinforcing bar prices are steady and unchanged with little shading reported. Additional subway work coming out will take 2500 tons. Sewer construction in New Jersey and Westchester county will also take large lots. General construction holds up well for the season. Small lot business is active.

Pittsburgh—Concrete bars are less active both in awards and inquiry. The largest local order is 200 tons for the Federal Reserve bank. Inquiry is limited to small lots. Prices are unchanged.

Buffalo—Little inquiry for concrete bars is pending here. No orders of size are reported so far this month. Mill operations continue low.

Birmingham, Ala.—Production of concrete bars will be maitained throughout the year. Several specifications are in sight to add materially to unfilled orders. Shipments are active with dealers still participating.

Contracts Placed

900 tons, including 400 tons for foundations, Ford Motor Co. plant at Buffalo, to Kalman Steel Co., Chicago; Fred T. Ley Co., general contractor; and 500 tons to make award 1500 tons instead of 1000 tons for superstructure, as noted in STEEL of Oct. 30, to Truscon Steel Co., Youngstown, O.; Hunkin-Conkey Construction Co., general contractor.

900 tons, warehouse foundations, Lehigh Valley railroad, Eleventh avenue, New York, to Carroll-Mc-

(*Concluded on Page 87*)

Strip

Prices Steady in Face of Small Sales and Dull Interest—Production Remains at Low Level

STRIP PRICES, PAGE 79

New York—Wide gage hot strip continues at 1.60c, Pittsburgh, and narrow at 1.70c. Cold-rolled strip is 2.35c, Pittsburgh. Business is slack with few signs of early improvement.

Worcester, Mass.—October was the second best month of the year in cold-rolled strip, second only to April. Revived activity in the Pacific Coast market plus improvement in the New York and Philadelphia districts are keeping production on a steady level. Cold rolled strip is quoted at 2.50c to 2.60c, base, Worcester.

Philadelphia — Hot-rolled strip now may be quoted at 1.55c to 1.60c, Pittsburgh, for widths over 6 inches to 24 inches and 1.65c to 1.70c on widths up to six inches. Hot-rolled strip over 24 inches is quoted at 1.80c, Pittsburgh, for heavy gages and 1.95c for light gages, plus blue annealed differentials. Occasional concessions are met. Cold-rolled strip is 2.35c to 2.45c, Pittsburgh and 2.35c is fairly firm as a minimum.

Pittsburgh—Strip tonnage is off moderately since this month. Demand from automotive interests is lagging and work on new models by some builders has been productive of only small lots of steel. Forward buying from other consumers also is lacking. Prices remain fairly steady, with narrow hot strip quoted 1.70c to 1.75c and wide material 1.60c to 1.65c. Cold-rolled strip, which has been in slightly better demand lately than hot strip, continues 2.35c to 2.45c. Mill operations are lower with hot strip production around 30 to 35 per cent and cold mills at 25 to 30.

Cleveland—Practically the only source of worth while strip tonnage from an automotive standpoint is the Fisher Body Co. Other consuming lines make up a good aggregate tonnage for local producers but individual orders are small. Inventories are being kept to the minimum. Cold is 2.35c, Cleveland. Hot strip is quoted 1.60c, Pittsburgh, for wide and 1.70c for narrow. Occasional small orders are placed by stamping concerns making household hardware.

Chicago—Hot-rolled strip mill operations are down, ranging at 35 to 40 per cent. Fair miscellaneous business and occasional automotive releases are reported. Wide strip is quoted 1.70c, Chicago, while the price for material under six inches is 1.80c. Cold-rolled strip mills are operating about 30 per cent, with no backlogs, despite recent automotive releases.

Warehouse Trading Slack; Prices, Tonnages Same

Warehouse Prices, Page 101

New York—Warehouse trading is slack, with little improvement over a month ago. Prices continue spotty. Jobbers expect little change in the near future.

Boston — After having enjoyed two or three months of fairly free movement of materials from stock, orders have suddenly taken a drop in the past week.

Philadelphia — Jobbers report slightly larger business. Prices are unchanged and shading is infrequent.

Pittsburgh—Demand is unchanged following a decline in October. Plates and shapes are more active than bars. Prices on nails and wire are lower.

Buffalo—Warehouse sales of iron and steel continue without feature. In general, business shows little change from October.

Cleveland—The local market for iron and steel from warehouse stocks shows little change from the featureless situation of recent weeks. An occasional jobber reports a slight upturn in sales, but he is invariably matched by another whose sales are gradually easing off. The situation in prices is unaltered, though concessions are becoming more common.

Cincinnati—Jobbers report slight change in rate of business. Demand is diversified but individual orders are light. Prices are being maintained.

St. Louis—Demand from warehouses remains below seasonal volume. Some manufacturing lines have increased their purchases, but generally the outlet through that source is narrow. Repair materials for the country remain quiet. The general line of fastenings and tie materials have not exhibited the usual seasonal pickup. Prices on all standard commodities remain steady at recent levels.

Operations' Percentages in Further Recessions

Youngstown, O.—Twenty-five open hearths are active against 27 last week for independents. Sheet production is from 35 to 40 per cent compared with 45 per cent a week ago. An additional blast furnace has been added to the inactive list. Relighting of Sharon Steel Hoop's Lowellville and Republic's Trumbull stacks is uncertain. Pipe production is little changed but strip and sheet schedules show sharp reductions. The cut in operations of Republic Steel Corp. plants here from 63 to 55 per cent forced the average rate for all plants in the district down two points to 50 per cent capacity. Sheet & Tube, Carnegie, Sharon Hoop and Newton Steel are unchanged at 50 per cent. Empire Steel's three plants again are idle.

Philadelphia—Ingot output for eastern steelworks is unchanged at 51-53 per cent capacity. Plate output is lower at 40-50 per cent from last week's 50 per cent level; shapes at 50-55 have declined from last week's 60-65 rate.

Pittsburgh—Ingot production is off further at 45 to 50 per cent compared to 50 last week. Finishing mill schedules generally are steady. Sheets continue 40 to 45, with tin plate at 45. Strip output is lower at 30 to 35 with pipe slightly below 50.

Buffalo — Two additional open-hearths have been dropped from the producing list, reducing operations in the week from 54 to 48 per cent. No further reductions in output are planned for this week, however, and the latter rate may be continued throughout the month.

Cleveland—With the lighting of five independent open hearths this week, ingot output is placed at 35 per cent capacity, 12 of the district's 34 furnaces pouring. This compares with last week's 21 per cent level. Otis Steel Co. has resumed operations with four open hearths producing.

Chicago—Ingot output is off to slightly under last week's 50 per cent. Finishing mill operations show little change from a week ago, except sheet mills are off a few points. Bar mills continue their recent higher rate. Active steelworks blast furnaces number 14 of 36.

Birmingham, Ala. — Steelmaking operations remain around 45 per cent. With exception of two out of 23 open-hearth furnaces, which are being enlarged, all ingot producers are in shape for quick recovery. Nine open-hearth furnaces are on.

Concrete Awards

(*Concluded from Page* 83)

Creery Co., Brooklyn, N. Y.

325 tons, building, University of California, Berkeley, Calif., to Pacific Coast Steel Corp., San Francisco.

300 tons, Lew Wallace school, Gary, Ind., to Kalman Steel Co., Chicago.

250 tons, Garden Homes school, Milwaukee, to Olney J. Dean Co., Chicago.

200 tons, building, Federal Reserve bank building, Pittsburgh, to Electric Welding Co., Pittsburgh.

200 tons, theater and store building, Davenport, Iowa, to Joseph T. Ryerson & Son Inc., Chicago.

200 tons, Balaban & Katz theater, Sixty-third street, Chicago, to unstated fabricator.

160 tons, warehouse addition, Santini Bros., 1405 Macombs road, Bronx, N. Y., to National Bridge Co., Long Island City, N. Y.; Turner Construction Co., New York, general contractor; Epple & Kahrs, Newark, N. J., architects.

150 tons, Stonewall Jackson junior high school, Oklahoma City, Okla., to Capitol Steel & Iron Co., Oklahoma City; Charles M. Dunning Construction Co., Oklahoma City, general contractor.

150 tons, school, Hammond, Ind., to Chris Hansen, Hammond.

150 tons, Lincoln Heights jail, Los Angeles, to unstated interest.

130 tons, building, Commercial Tire Co., Seattle, to Northwest Steel Rolling Mills, Seattle.

120 tons, bank building at Hamilton, O., to Pollak Steel Co., Cincinnati.

120 tons, bridges over Wilson river, Portland, Oreg., to unstated interest.

115 tons, high school, Mt. Lebanon, Pa. to the Electric Welding Co., Pittsburgh; Pittsburgh Engineering & Construction Co., Pittsburgh, general contractor.

112 tons, five bridges in Lincoln county, Oreg., to unstated interest.

100 tons, Killbuck Run bridge, Allegheny county, to Fort Pitt Bridge Works Co., Pittsburgh; Welch Construction Co., Pittsburgh, general contractor.

Contracts Pending

3000 tons, two lots, storage tanks for Phillips Petroleum Co., Chicago.

1000 tons, West Side elevated highway, New York.

700 tons, warehouse, Crane Co., Brooklyn, N. Y.

600 tons, grain elevator at Lethbridge, Alta., for department of trade and commerce, Ottawa, Ont.

250 tons, prison additions, Dannemora, N. Y.

200 tons, building and tunnel, Pilgrim hospital, Long Island City, N. Y.

200 tons, prison additions, Auburn, N. Y.

150 tons, Fox theater, Billings, Mont.; bids received.

Unstated tonnage, plant addition, Public Service Co. of Northern Illinois, at Waukegan, Ill.

Odor to Warn of Fire

New York—A disagreeable odor, shot through ventilation lines at the rate of thousands of feet per minute, will be used to warn miners of fire in all metal mines complying with provisions of the American Standard Code for fire fighting in metal mines. The standard has been approved by the American Standards association.

In addition to the disagreeable odor as a warning signal, the standard also provides that in all mines equipped with electric lights the engineers shall also flash all electric lights nine times in three series of three flashes each.

President Stresses Waste in Industrial Conflict

"Industrial conflict is the greatest waste in industry," declared President Hoover in a radio hookup Nov. 8 in connection with a broadcast by the H. J. Heinz Co., Pittsburgh. The President said further:

"Mechanization is so distinctive of our modern civilization that even as a mechanical conception we often tend to forget that the most powerful machine in the world is the men and women themselves. It is the human being from which the achievement is won far more than the tool. Man learned the art of staying alive long before he learned the art of mechanics. The machine must build him a better life."

Forward Tool & Mfg. Co., 355 North Union Park court, Chicago, has increased capital from $10,000 to $40,000.

Pipe

Cast Demand Low—5000 Tons for San Francisco Reported Let —Quotations Firm

PIPE PRICES, PAGE 101

New York—Cast pipe prices are steady at $36 to $37, eastern foundry. Sales volume is not large. Utilities are expected to make inquiry for first half needs soon. Foundry backlogs are small. Operations are no higher than 60 to 65 per cent in most instances. Small lot shipments aggregate fairly heavy. Colonie, N. Y., placed 400 tons, as did the city of New York. Eastern pipe producers understand that 5000 tons of 12-inch pipe for California water service, San Francisco, a 12-mile line, has been awarded.

Boston—Some fairly large cast pipe tonnages are in prospect in New England but awards proceed slowly. Beverly and Attleboro, Mass., each placed 100 tons. Norfolk, Mass., wants 6000 feet of various sizes. Prices are firm, $36 to $37 being the usual prices. Private business is maintained at good volume.

Chicago—Bids on 3500 tons of cast pipe for Detroit show United States Pipe & Foundry Co., and Glamorgan Pipe & Foundry Co. low at $44 to $45, delivered. Moderate private orders are being closed, and 500 to 600 tons of contract work is on inquiry. Chicago delivered prices for 6 to 24-inch cast are $45.20 to $46.20. Sewer pipe orders are being closed for the season.

Pittsburgh—Activity in tubular products continues to decline slowly. Standard pipe, dull for a number of months, shows little further decrease in demand but is seasonally quiet. New line pipe business is quiet with backlogs steadily declining. Oil country goods move slowly, and improvement is lacking in locomotive and boiler tubes and mechanical tubing. Pipe mill operations are slightly below 50 per cent.

Cleveland—Jobbers' pipe orders grow scarcer. Only an occasional carload is noted. Some bidders on the 200 tons or more for the Higbee Co. department store building have withdrawn, figures being too low. Pipe for the John Marshall high school will probably total three or four carloads.

Birmingham, Ala.—Cast pipe lettings continue to slow down. Backlogs are on the wane. Shipments are steady and production is maintained as specifications against contracts placed some time ago are received. Winter business is slow in being placed. Little material is being purchased by pipe foundries.

Contracts Placed

400 tons, 4 to 12-inch cast pipe for Queens, N. Y., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

400 tons, 6, 8 and 10-inch cast pipe for Colonie, N. Y., Latham's water district, to United States Pipe & Foundry Co., East Burlington, N. J.; Solomon & Keis, Troy, N. Y., engineers.

200 tons, miscellaneous sizes cast pipe including 126 tons of 20-inch class F special flanges for Anacortes, Wash., to United State Pipe & Foundry Co., Seattle.

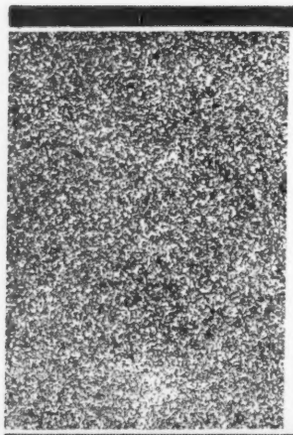
100 tons, 8-inch cast pipe for Beverly, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

100 tons, 6-inch cast pipe for Attleboro, Mass., to United States Pipe & Foundry Co., East Burlington, N. J.

Steel Pipe Orders

1700 tons, 34 to 58-inch welded steel pipe for Los Angeles, to Western

COLD ROLLED STRIP STEEL



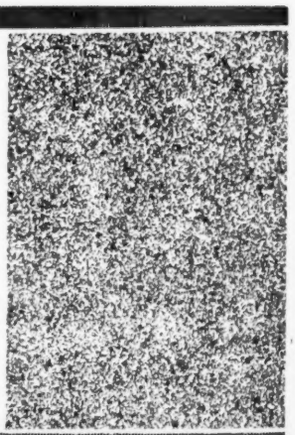
WHEN YOUR FACTORY WHISTLE BLOWS—

and you are ready to start that new production job, SHARON SERVICE means steel in your plant for the occasion. No delays or unnecessary shut downs are encountered when you order from SHARON.

SHARON MEN aided by SHARON EQUIPMENT are driven with one thought uppermost — DELIVERY ON TIME.

That SHARON SERVICE is DEPENDABLE is attested by an ever increasing host of satisfied users of cold rolled strip.

"SAVE WITH STEEL"



SHARON STEEL HOOP CO.

SHARON ▲ ▲ ▲ ▲ ▲ PENNSYLVANIA

Pipe & Steel Co., Los Angeles.

Contracts Pending

3500 tons, 24 and 36-inch cast pipe for Detroit; United States Pipe & Foundry Co., East Burlington, N. J., and Glamorgan Pipe & Foundry Co., Lynchburg, Va., low at $44 to $45, delivered.

5000 tons, 12-mile line of 12-inch pipe for California water service, San Francisco; reported awarded.

700 tons, 4 to 12-inch for penitentiary development, Rikers Island, N. Y.

300 tons, 20-inch for Manhattan, N. Y.; bids Nov. 14.

225 tons, 6 to 12-inch cast pipe for Brentwood, Long Island, N. Y.; bids Nov. 12.

105 tons, 0 to 8-inch class B cast pipe for Alhambra, Calif.; bids received.

Unstated tonnage, 6000 lineal feet of cast pipe for Norfolk, Mass.; bids open Nov. 17.

Steel Pipe Pending

390 tons, 24-inch welded steel pipe, East Bay Municipal Utility District, Oakland, Calif.; Steel Tank & Pipe Co., Portland, Oreg., low bidder.

100 tons, steel pipe for Pennsylvania railroad; bids open Nov. 17.

Ferroalloy Demand Less; Contracting Is Delayed

Ferroalloy Prices, Page 90

Pittsburgh — Activity in ferroalloys continues attuned to steelmaking operations and is off moderately during the past several weeks. Ferromanganese and spiegeleisen are moving in limited volume against contracts, with little buying in the spot market. Prices continue $103.79, delivered, for ferromanganese and $33, furnace, for spiegeleisen, with differentials applied on larger lots. Demand for other ferroalloys shows little change but continues seasonally light. Ferrotungsten is dull with the market usually $1.10 to $1.15.

New York—Reflecting steel mill operations, the movement in ferromanganese appears smaller than a month ago. Meanwhile, prices are unchanged at $99, duty paid, for carloads to 500 tons annually. Domestic spiegeleisen, 19 to 21 per cent, is $33, furnace, subject to differentials for quantities.

Ferroalloys other than the manganese group are receiving fairly good demand. Numerous small orders are being placed for almost all alloys. This is because high grade alloy steels are more active than the common grades. Although it is time to announce prices on contracts for the following year, nothing has been heard on the subject. It is probable that under present business conditions contracting will be late. Current prices of all ferroalloys and ores are unchanged.

Wire

Activity Lacking in All Markets—Nail Weakness Holds Prices at Low Level Generally

WIRE PRICES, PAGE 79

Chicago—Several tonnage orders of manufacturers' wire have been placed for the autmotive industry. Jobber sales continue a feeder to merchant products, while dealer activity is light. Dealers have fairly light stocks. Prices on nails are quoted about $1 a ton lower in line with weakness east of here, but sales are hardly sufficient to test prices.

Worcester, Mass.—A number of new accounts are appearing but orders are small though many. Production is about 50 per cent, with the electrical trade maintaining premier position among buyers. Meanwhile, prices are holding. Plain bright wire to dealers is 2.40c, base, Worcester.

New York—Nails continue to move at a spread of $1.90 to $2, Pittsburgh, most tonnage going at around $1.95. Leading sellers report that the improvement in demand in October is being fairly maintained, although leaving much to be desired. Plain bright wire is unchanged at 2.30c, Pittsburgh.

Pittsburgh—Wire tonnage is dragging, but little changed from activity of recent weeks. Prices still lack strength, with standard wire nails quoted $1.95 to jobbers and $2 to the merchant trade. The former $2.05 price to the latter generally has disappeared. Plain wire usually is 2.30c. Demand for manufacturers' wire reflects general business conditions.

Cleveland—Wire mills continue to take occasional small orders, the buying rate being far from the aggregate needed to keep them busy. Manufacturers' wire is held at 2.30c, although jobbers have bought at 2.20c, Cleveland. Nails are any price that will take the occasional order that comes up. As low as $1.90, Cleveland, has been done by some mills and some large jobbers quote that figure in car lots. Some mills claim to be getting $2 on undesirable orders.

Nut, Bolt, Rivet Trade Gives No Tonnage Gain

Bolts, Nuts, Rivets Prices, Page 79

New York—Bolt and nut prices are unchanged, with demand slack. Railroads, normally the largest consumers, show little interest, and jobbers, the second largest buying group, also are manifesting little activity.

Pittsburgh—Bolt, nut and rivet quotations are fairly well maintained in the face of continued poor demand. Prices remain 73 off for bolts and nuts and 2.75c, Pittsburgh, for large rivets.

Cleveland—Nut, bolt and rivet production is at 40 per cent as an average. Some are running 50 per cent but others about 30 per cent. Orders are scattered and for small amounts.

Chicago—Nut and bolt specifications are falling below October. Bolt and nut discounts are 64 to 73 off.

Semifinished Steel Dull; Prices Are Unchanged

Semifinished Prices, Page 90

Pittsburgh—Shipments of semifinished steel are lighter, reflecting reduced operations of finishing mills. New business is small, consisting of occasional orders for limited tonnages, none of which provides a test of the market. Prices continue $31 for rerolling billets, slabs, and sheet bars, and $36 for forging billets and wire rods.

Chicago—Shipments of sheet bars have gained in the last few days, but otherwise the semifinished market is quiet. Prices for sheet bars and small billets are nominal at $32, Chicago, in the absence of activity.

Youngstown, O.—Since demand for billets and sheet bars has declined, due to closing of nonintegrated strip and sheet mills more open-hearth furnaces of independent steelmakers have become idle. Independent open-hearth capacity active this week is around 44 per cent, against 46 per cent last week and 50 per cent two weeks ago. As completion of the large welded pipeline orders, placed in the summer, approaches as is expected by the end of November, further curtailment of active open-hearth capacity appears inevitable within the month. Quotations on billets, slabs and sheet bars hold at $31, Youngstown and Pittsburgh.

Philadelphia—Current business in steel billets is small but prices are unchanged at $31, base, Pittsburgh, for rerollers, and $5 higher for forging quality.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$17.50
Pittsburgh, district fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley, furnace	17.00
Cleveland fur., local del.	17.50
Philadelphia, delivered	18.76 to 19.76
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	20.41 to 20.91
Buff., all-rail, Newark	18.78 to 19.28
Ala., Bir. fur., local del.	14.00
Alabama, del. Chicago	17.51
Alabama, del. St. Louis	16.42
Alabama, del. Cincinnati	15.19 to 16.19
Alabama, del. Cleveland	17.51
Ala., Phila., dock del.	16.75 to 17.25
Ala., Balt., dock del.	16.50 to 17.00
Alabama, New York dock	16.50
Ala., Boston dock del.	17.25
Tenn., Bir. base, local del.	14.00
Tennessee, del. Cin.	15.19 to 16.69
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	18.00
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	19.28 to 19.78
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	19.26 to 20.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	19.00
Eastern, del. Phila.	19.76 to 20.76

MALLEABLE

Chicago, furnace	17.50
Cleveland fur., local del.	17.50
Pittsburgh district fur.	18.00
Pittsburgh, delivered	18.63 to 19.13
Valley furnace	17.50
Buffalo fur., local del.	18.00
Eastern Penna., delivered	19.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Eastern Penn., del.	17.50 to 18.00
Buffalo fur., local del.	17.00
Montreal, delivered	22.50
Valley furnace	17.00

BESSEMER

Valley furnace	17.50
Pittsburgh, delivered	18.63 to 19.13
Pittsburgh, furnace	18.00

LOW PHOS

Valley fur., standard	27.00
Philadelphia, standard	24.76 to 28.79
Furnace, copper-bearing	23.00 to 23.50

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chicago	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$33; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6 00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell. basis.	5.50
Portsmouth, O., ovens, Connell. basis	5.50
Buffalo ovens	8.00 to 8.50
Detroit, ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross Ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	11.00
North African low phosphorus	10.00
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	9.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$12.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.50

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	27 to 28 cents
Indian, 48-50% (nom.)	27 to 28 cents
Brazilian, 46-48% (nom.)	25 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43.00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK

Per net ton

9 x 4½ x 2½	65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$31.00
Pittsburgh, bessemer	31.00
Youngstown	31.00
Cleveland	31.00
Philadelphia	36.30
Chicago	32.00
Forging, Chicago	37.00
Forging, Pittsburgh	36.00
Forgings, Philadelphia	41.30

SHEET BARS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00
Chicago	32.00

SLABS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00

WIRE RODS

Pittsburgh, Cleveland	$36.00
Chicago	37.00

SKELP

All grades, Pittsburgh	1.60c to 1.70c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$99.00
*Ferromanganese, del. Pittsburgh	103.79
Spiegeleisen, 19-21%, domestic fur. spot†	33.00
*Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.15
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do, one ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

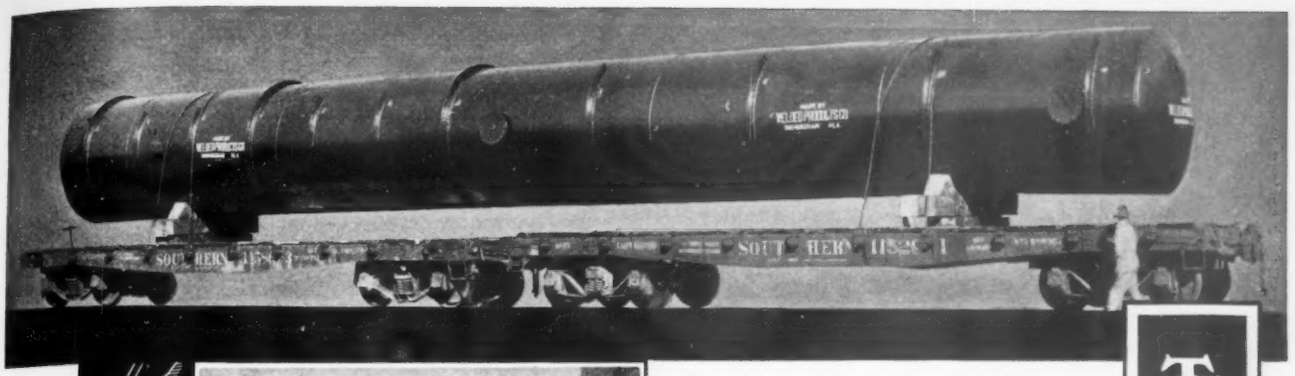
†Carloads. Differentials apply to large quantities.

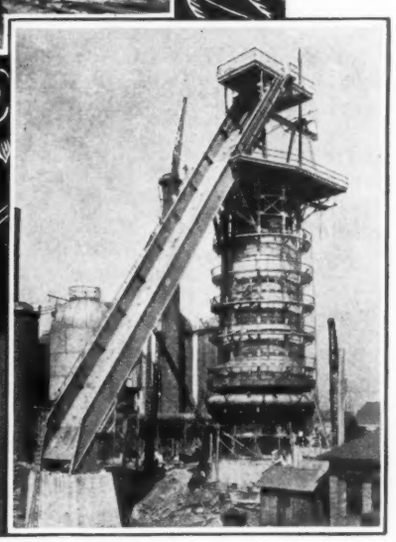
*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$17.25
Washed gravel, import duty paid east, tide, gross ton	19.50





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TENNESSEE STEEL

Tennessee's plates are daily being utilized in plate work of practically every character and description and are finding their way to almost every quarter of the globe. In the severe bending and forming operations attendant upon both standard and special uses they have been tried and found not wanting.

Illustrated on this page are a pontoon by Welded Products Company; treating cylinder by R. D. Cole Manufacturing Company; balloon flue, miscellaneous tanks and blast furnace work by Birmingham Tank Company—all from Tennessee Plates. Write for full information.

US STEEL

Tennessee Coal, Iron & Railroad Company

General Offices: Brown-Marx Building, Birmingham, Ala.

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Pig Iron

American Radiator Purchase Week's Feature—General Buying Slack in All Districts

PIG IRON PRICES, PAGE 90

Pittsburgh—Pig iron shipments have improved slightly in some respects. Radiator companies are running better than for several weeks but most iron foundries are operating at a low rate. Steel foundries are doing relatively better. New pig iron orders generally lack improvement and are confined to small lots for prompt shipment. The market is usually $17, valley, for No. 2 foundry and basic and $17.50 for bessemer and malleable. These quotations are subject to concessions on more attractive tonnages.

Boston—Buying of pig iron during the past week was limited, aggregating some 3000 tons, of which Mystic Iron Works disposed of 1300 tons. Price is fairly firm at $16, base, Buffalo. There are no inquiries and sales are largely the result of personal solicitation.

New York—Placing of 50,000 tons of foundry iron by the American Radiator & Standard Sanitary Mfg. Corp. has given the market here a brighter aspect. While still not large, positively not aggregating more than 6000 tons, fresh inquiry has been stimulated, the action of the American company being taken as signifying that this company regards the market at bottom. Buffalo iron is $15.50 to $16, furnace. Recent slight concessions under this spread have largely disappeared. Southern iron is unchanged at $16.50, delivered New York docks. Deliveries on the American Radiator are for late fall and early 1931. The American Locomotive Co. is inquiring for 350 tons for its Schenectady, N. Y., plant. Of this 200 tons are No. 1X and 150 tons malleable.

Philadelphia—Pig iron buying is restricted to small and moderate lots of foundry iron. Prices are unchanged.

Buffalo—Denial is obtained from official sources of the rumor that another blast furnace was to suspend operations this week. This stack will continue in blast until at least Dec. 1, it is now stated. Only one furnace in all western New York and northern Pennsylvania now is making merchant iron and producers feel that a strong situation is being developed in spite of current small sales and inquiry. October deliveries exceeded those of September, and November shipments have started at an improved rate.

Cincinnati—Demand for pig iron shows no improvement, with sales during the past week at less than 1500 tons, all small lots. A Northern Ohio melter is inquiring for 400 tons, part for first quarter needs. Prices appear steady.

Youngstown, O.—Several small purchases of various grades of pig iron the past week or ten days have served to continue the prevailing quotations of $17, valley, for No. 2 foundry and basic and $17.50 for malleable and bessemer. Such purchases covered tonnages ranging from 50-ton lots to several hundred tons, practically all for immediate delivery. Stocks have been accumulating somewhat in furnace yards, which has led to practically all unattached merchant furnaces in both Shenango and Mahoning valleys being blown out or banked.

Cleveland—While shipments of pig iron are better than in October and as good as any week for several months for most sellers, sales are spotty. One seller with headquarters at Cleveland reports sale of 10,000 tons during the week; on the other hand another moves only an occasional carload. Cleveland furnaces quote $17.50, base, locally delivered, with a minimum of $16 a ton for delivery outside. Prices by other lake furnaces are unchanged, holding at $17 to $17.50, base, for shipment into competitive territory. Furnaces with headquarters at Cleveland sold 13,500 tons during the week.

Chicago—Purchase of 50,000 tons of southern pig iron by the American Radiator & Standard Sanitary Mfg. Corp. has tended to stiffen the Chicago delivered price on that grade to $11.50, base. Alabama furnace quotations of $11, base, have disappeared. Several small orders for southern iron have been closed in this district. Northern iron inquiry is more active and sales show a moderate gain in the last week. An inquiry for about 5000 tons of foundry iron is reported taking form east of here. November deliveries are gaining over October.

St. Louis—Except for small tonnages to be shipped promptly, purchasing is at a standstill. As a rule melters are taking only enough iron to apply on orders booked. Measured by performance in prior years, there is still a large tonnage to be acquired for first quarter. Inquiry for that period, however, is light. According to both sellers and buyers, there is practically no resistance to present prices.

Birmingham, Ala.—Purchase of a large tonnage of pig iron for distribution among plants of the American Radiator & Standard Sanitary Corp., totaling about 50,000 tons, brought considerable stimulation to the market here. Nine blast furnaces are on. Home base price is still $14 for No. 2 foundry.

Toronto, Ont.—Demand for merchant pig iron continues featureless. Melters are placing orders in small tonnage lots. Sales for the week fell below the 500-ton mark made up of single car lots. Blast furnace representatives do not look for early improvement in business, although there is prospects of more active buying for first quarter delivery. The daily melt is holding from 35 to 40 per cent. Prices are unchanged.

Radiator Iron Purchase Covers 50,000 Tons

Purchase of 50,000 tons of Alabama pig iron by the American Radiator & Sanitary Mfg. Corp. within the past several days is the high light of the pig iron market.

The entire block of pig iron was purchased from the Woodward Iron Co., Birmingham, Ala., it being the greater portion of a stock of 60,000 tons of sand-cast iron which the Woodward company had accumulated on its yard banks. The company, as announced some weeks ago, is preparing hereafter to sell only machine-cast iron, and this American Radiator purchase thus practically cleans up the Woodward stock of sand-cast material.

It is understood that an attractive price was made on this iron. Since the whole transaction is regarded in the pig iron trade as a special arrangement under the circumstances, the general Birmingham market has not been affected and the price on No. 2 foundry iron in that district remains unchanged at $14, Birmingham. It also is understood that no furnace interest other than the seller received an inquiry from American Radiator.

The iron is for use in its Bayonne, N. J., Litchfield, O., Birmingham, Ala., and Louisville, Ky., plants. The Bremen, Ind., and Kansas City, Mo., plants are idle. The company bought several thousand tons in September at Chicago for its plant at St. Paul.

Scrap

Continued Decline Takes Market to New Lows—Melters Buy Little and Dealers Withdraw

Chicago—While a leading steelworks melter has lifted restrictions on heavy melting steel shipments, movement to steelworks yards is limited by space and facilities for handling. The variable melt and lack of desire of melters to lay down more material is adding to weakness which has continued for more than 30 days. Several basic and acid open hearth grades are off 25 to 50 cents, while some cupola and rail mill scrap has dropped $1 a ton. Most large yard dealers are refusing to buy and have withdrawn buying quotations. Large melting steel supplies are said to be due largely to the fact that much material is being shipped as melting steel which normally would obtain a higher differential. Nominal quotations for melt-

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham	10.00 to 11.00
Boston, dealers	7.10 to 7.50
Buffalo, No. 1	12.00 to 12.25
Buffalo, No. 2	10.50 to 10.75
Chicago	10.25 to 10.75
Cinci., deal.	10.00 to 10.50
Cleve., No. 1	11.00 to 11.25
Cleve., No. 2	10.25 to 10.50
Det., No. 1 deal.	10.00 to 10.50
Det., No. 2 deal.	7.00 to 7.50
E. Pa. del. mill	11.50 to 12.50
N. Y. del. R. R.	8.00
N Y. deal. No. 2	6.25 to 6.50
N. Y., deal. yd.	6.00
Pitts., No. 1	13.00 to 13.50
St. L. No. 1 sel.	11.00 to 11.50
Federal, Ill.	10.00 to 10.50
Granite C., Ill.	9.25 to 9.75
Valleys No. 1	14.00 to 14.50

COMPRESSED SHEETS

Buffalo, dealers	10.50 to 10.75
Chicago	9.00 to 9.50
Cleveland	10.50 to 10.75
Detroit, dealers	10.00 to 10.50
E. Pa. new mat.	10.50 to 11.50
Pittsburgh	12.75 to 13.25
Valleys	13.50 to 14.00

BUNDLED SHEETS

Buffalo	8.00 to 8.50
Cinci., deal	9.25 to 9.75
Cleveland	8.00 to 8.50
Eastern Pa.	9.50
Pittsburgh	11.50 to 12.00
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	6.50 to 7.00
Cincinnati	5.50 to 6.00
Detroit, dealers	7.00 to 7.50
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	12.00 to 12.50
Boston, dealers	6.50 to 6.75
Buffalo	15.00 to 15.50
Chicago (3 ft.)	13.00 to 13.50
Chicago (2 ft.)	13.50 to 14.00
Cinci., deal.	15.50 to 16.00
Detroit, deal	14.00 to 14.50
Pitts. (open-hearth, 3 ft. and less)	15.50 to 16.00
St. Louis	13.50 to 14.00

STOVE PLATE

Birmingham	8.50 to 9.00
Boston, con.	8.00 to 8.50
Buffalo	9.50 to 9.75
Chicago, net	6.50 to 7.00
Cinci., deal. net	5.75 to 6.25
Det., net, deal.	6.50 to 7.00
Eastern Pa.	9.50
N. Y., deal. mill	5.25
St. Louis	8.50 to 9.00

COUPLERS, SPRINGS

Buffalo	14.50 to 15.00
Chicago	12.00 to 12.50
Eastern Pa.	16.00 to 17.00
Pittsburgh	15.50 to 16.00
St. Louis	12.00 to 12.50

ANGLE BARS—STEEL

Chicago	12.00 to 12.50
St. Louis	10.00 to 10.50

LOW PHOSPHORUS

Buff., billets and bloom crops	15.50 to 16.00
Cleveland bil. and bloom crops	17.50 to 18.00
Eastern Pa.	17.50 to 18.00
Pittsburgh	8.25 to 8.75
bloom crops	17.50 to 18.00
Pitts. sheet bar crops	16.00 to 16.50

FROGS, SWITCHES

Chicago	11.00 to 11.50
St. Louis	11.00 to 11.50

SHOVELING STEEL

Chicago	10.50 to 11.00
Cleveland	7.50 to 8.00
St. Louis	10.00 to 10.50

RAILROAD WROUGHT

Birmingham	9.50 to 10.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	9.00 to 9.25
Buffalo, No. 2	12.00 to 12.25
Chicago, No. 1	10.00 to 10.50
Chicago, No. 2	10.50 to 11.00
Cinci., No. 2	10.00 to 10.50
Eastern Pa.	13.50
N. Y., No. 1 deal.	10.00 to 10.50
Pitts., No. 2	13.00 to 13.50
St. Louis, No. 1	8.00 to 8.50
St. Louis, No. 2	10.00 to 10.50

SPECIFICATION PIPE

Boston	6.50 to 7.00
Eastern Pa.	12.00
N. Y., deal	7.25 to 7.50

BUSHELING

Buffalo, No. 1	10.50 to 10.75
Chicago, No. 1	8.00 to 8.50
Cinn., No. 1 dl.	8.50 to 9.00
Cinn., No. 2	5.50 to 6.00
Cleve., No. 2	7.00 to 7.25
Det., No. 1 new deal.	9.00 to 9.50
St. L. No. 1	7.00 to 7.50
Val. new No. 1	13.00 to 13.50

MACHINE TURNINGS

Birmingham	7.50 to 8.00
Boston, dealers	2.75 to 3.25
Buffalo	6.00 to 7.00
Chicago	4.75 to 5.25
Cinn., deal.	6.00 to 6.50
Cleveland	6.00 to 6.25
Detroit	4.00 to 4.50
Eastern Pa.	7.00 to 8.00
N. Y., deal.	4.00
Pittsburgh	6.00 to 6.50
St. Louis	4.00 to 4.50
Valleys	9.00 to 9.50

BORINGS AND TURNINGS For Blast Furnace Use

Boston	2.50 to 3.00
Buffalo	7.00 to 7.50
Cinn., deal.	5.50 to 6.00
Cleveland	7.50 to 7.75
Detroit, deal	4.50 to 5.00
Eastern Pa.	7.00 to 8.50
N. Y., deal.	4.00
Pittsburgh	8.00 to 8.50

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	7.50 to 8.00
Boston., chem.	9.00 to 9.50
Boston, deal.	3.00 to 3.25
Buffalo	7.00 to 7.50
Chicago	3.75 to 4.25
Cinn., deal.	5.50 to 6.00
Cleveland	7.50 to 7.75
Detroit, deal	4.50 to 5.00
Eastern Pa.	8.50
E. Pa., chem.	14.00 to 14.50
N. Y., deal.	4.00
Pittsburgh	8.00 to 8.50
St. Louis	7.50 to 8.00

PIPE AND FLUES

Cinn., deal	8.00 to 8.50

RAILROAD GRATE BARS

Buffalo	8.00 to 8.50
Chicago net	6.50 to 7.00
Cincinnati	7.00 to 7.50
Eastern Pa.	9.50 to 10.00
N. Y., deal.	6.00
St. Louis	7.50 to 8.00

FORGE FLASHINGS

Boston, deal.	5.75 to 6.00
Buffalo	10.00 to 10.50
Cleve. ov. 10 in.	10.00 to 10.50
Detroit	9.00 to 9.50

FORGE SCRAP

Boston, del.	5.75 to 6.00
Chicago	13.50 to 14.00
Eastern Pa.	11.00

ARCH BARS, TRANSOMS

Chicago, net	11.50 to 12.00
St. Louis	11.50 to 12.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	10.50 to 11.00
Chi., steelworks	6.50 to 7.00
Cleveland	11.00 to 11.50
Eastern Pa.	11.50 to 12.00
Pittsburgh	11.50 to 12.00
St. Louis	7.50 to 8.00

STEEL CAR AXLES

Birmingham	14.00 to 15.50
Boston., ship. pt	16.00 to 17.00
Buffalo	15.50 to 16.00
Chicago	15.10 to 15.70
Eastern Pa.	20.50
St. Louis	14.00 to 14.50

SHAFTING

Bos., ship. pt.	13.00 to 13.50
Chicago	15.10 to 15.70
Chicago	12.90 to 13.45
N. Y., deal.	13.00 to 14.00
St. Louis	12.00 to 12.50

CAR WHEELS

Birming., iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.50 to 14.00
Buffalo, steel	14.50 to 15.00
Chicago, iron	12.00 to 12.50
Chi., roll steel	13.75 to 14.25
Cincinnati	11.50 to 12.00
Pitts., iron	14.00 to 14.50
Pitts., steel	15.50 to 16.00
St. Louis iron	11.00 to 11.50
St. Louis, steel	13.00 to 13.50
E. Pa. steel	16.75 to 17.00
E. Pa. iron	14.50 to 15.00

NO. 1 CAST SCRAP

Birming., cup.	10.00 to 10.50
Buffalo (mac.)	10.00 to 10.50
Boston, textile	11.00 to 11.50
Chicago, mach.	10.65 to 11.20
Chi., railroad	10.15 to 10.65
Chicago, agri.	9.50 to 10.10
Cinn., mach. cup., gross	14.50 to 15.50
Cleve. cupola	13.50 to 14.00
Det., net deal.	8.50 to 9.00
E. Pa. cupola	13.50
N. Y. cup. deal.	8.00 to 8.50
N. Y., del. local foundries	14.00
Pitts., cupola	12.50 to 13.00
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 ma.	10.75 to 11.25
St. L. No. 1	10.00 to 10.50

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast	11.50 to 12.50
Buffalo, break	7.25 to 7.75
Cleve., break	8.00 to 8.50
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	7.00 to 7.50
Eastern Pa.	11.00 to 11.50
N. Y. No. 1 dl.	7.00 to 8.00
N. Y. break. dl.	7.00 to 7.50
Pittsburgh	9.50 to 10.00

MALLEABLE

Boston R. R.	14.00 to 14.50
Buffalo	13.50 to 14.00
Chicago, agri.	11.00 to 11.50
Chicago, R. R.	12.50 to 13.00
Cinn., R. R. dl.	12.50 to 13.00
Cinn., agri., dl.	12.50 to 13.00
Cleve., rail	13.50 to 14.00
Det. auto deal.	12.50 to 13.00
St. Louis, rail	10.00 to 10.50

RAILS FOR ROLLING
5 feet and over

Birming., cup.	12.50 to 13.00
Boston	10.00 to 10.25
Buffalo	11.00 to 12.00
Chicago	13.00 to 13.50
Eastern Pa.	20.50
New York	9.50 to 10.00
St. Louis	12.00 to 12.50

LOCOMOTIVE TIRES

Chicago, cut	13.00 to 13.50
St. L. No. 1	11.00 to 11.50

LOW PHOS. PUNCHINGS

Chicago	12.00 to 12.50
Pittsburgh	15.00 to 15.50
Eastern Pa.	16.00 to 17.00
Buffalo	15.00 to 15.50

Now all are made by the Kaufman Method

THE Kaufman Method of extrusion has produced consistently better cap screws than were ever possible to make before. It disregarded previous standards of accuracy and set up a new one—one that has paid the users of Cleveland Cap Screws well indeed in faster assemblies and tighter jobs. On your next order for Cleveland Cap Screws take particular notice of the uniformity of thread accuracy, the fine finish and great tensile strength.

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CLEVELAND CAP SCREWS

ing steel are $10.25 to $10.75, and as a leading buyer has turned down offerings at $10.50, some dealers are quoting lower. Dealer buying prices are $10.25 to $10.50. Cast borings are the lowest since 1921, the only outlet being to the St. Louis district.

Boston—The scrap market remains in the same desultory state that has existed for the best part of a month. Chemical borings are in some demand but there is a lack of supply.

New York—Local scrap dealers have reduced buying prices on clean cast borings to $4.50, New York; foundry stove plate to $5.50 to $6 and No. 1 railroad steel to $8. Shipments of No. 1 railroad steel for Bridgeport at $9, New York, have ceased and also some of the higher priced tonnage for eastern Pennsylvania. A delivered price of $11.50, Coatesville, Pa., is an important factor in the establishment of the local market on No. 1 railroad steel. A factor in the local stove plate market is a tonnage for West Mahwah, N. J., dealers paying $7.75, delivered. The situation generally is quiet.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Philadelphia—Scattered sales feature the market for steel and iron scrap, with some prices lower.

Buffalo—Purchases of No. 1 cast at $10.25 and of stove plate at $9.75 are reported here, several thousand tons all told being involved. These prices continue the downward movement recently so pronounced and dealers are lowering quotations for material accordingly.

Pittsburgh—Absence of mill buying continues to have a depressing effect on steel and iron scrap prices. Quotations are largely nominal but lower. Dealers are willing to sell heavy melting steel at $13.50 and this grade is 50 cents lower since a week ago. All mills are out of the market and little hope is entertained for tonnage buying soon. Demand for other grades is limited to small lots.

Cleveland—Activity in iron and steel scrap remains quiet. Mounting stocks in dealers' yards have become a menace to price stability and consumers are deferring purchases as long as possible. This result is evidenced in the fact that cast iron borings, heavy breakable iron, melting and malleable steel, sheets, bundled and compressed, and machine shop turnings are quoted 25 cents to $1 lower than a week ago.

Cincinnati—Rails for melting are off 50 cents, to $11 to $11.50 as a reflection of a recent purchase by a dealer. The same influence carried heavy melting steel to $10 to $10.50. Other items are nominally unchanged, with demand quiet.

Detroit—Steel and iron scrap continues weak and further reductions have been made in a number of grades. No support is being given the market and lower prices are expected.

St. Louis—Steel and iron scrap remains quiet, with the trend of prices downward. The past several days have witnessed certain items, notably for steel plants, making new low levels. Dealers still have a fair volume of orders, but many of their customers have requested deferred deliveries. Some important users, however, are taking everything due them on contracts, and in addition buying small tonnages to complete mixtures.

Birmingham, Ala.—Weakness in steel and iron scrap is persistent and sales recently of heavy melting steel have been at $11 for best quality. Stock has been brought into the district from the Southwest though local supplies were ample. Stove plate is not above $10.

Toronto, Ont.—Business in iron and steel scrap is lifeless and consumers and dealers show little interest. Sales are mostly small tonnages. Mills are placing orders and taking delivery on heavy melting steel but apparently are not interested in turnings. Consumers of iron scrap are buying for spot consumption.

Nitriding Aided Coste

New York—A statement by the Societe Francaise Hispano-Suize, Paris, manufacturer of the 650-horsepower, 12 cylinder motor in the Question Mark, airplane, recently flown by Coste and Bellonti across the Atlantic, attributes to the use of nitrided cylinders, tappets, timing gears and certain other parts, much of the credit for the success of the trip. The distance flown was 18,640 miles. From the time the ship left Bourget field in France it was unnecessary to make any change of parts in the motor.

Coke

Foundry Needs Gain Slightly —Market Still Is Seasonally Dull—Prices Fairly Firm

COKE PRICES, PAGE 90

Pittsburgh—Beehive coke activity is regulated by general industrial operations. Furnace coke is moving slowly to gas producers and not at all to blast furnaces. Foundry coke is in slightly better demand from radiator makers, but still is seasonally dull. Heating coke for industrial consumers shows less than usual activity. Domestic beehive fuel is in only fair demand. Prepared by-product coke is moving well. Prices are unchanged and fairly steady on all grades.

Beehive coke production in the Connellsville district during the week ending Nov. 1 was 17,520 tons against 17,790 tons the preceding week and 56,670 tons the corresponding week of last year, according to the *Connellsville Courier*.

Boston—Continuance of more seasonal weather has developed a better movement of domestic coke. Foundry coke contracts are more than sufficient to care for requirements.

Cincinnati — By-product foundry coke moves slowly on old contracts, with indication November tonnage will be light. The price remains at $9, delivered Cincinnati.

St. Louis—Specifying on metallurgical coke contracts continues in fair volume, but new business is light. Melters are ordering only for immediate requirements, the usual autumn storage operations being little in evidence. Cooler weather has boosted demand for domestic sizes. Industrial demand remains quiet, with shipments so far this month at about the average October rate.

Pacific Coast

Improved Demand Is Met at San Francisco—Pending Tonnage Promises Much Future Buying—Prices Holding Well —Pipe Inquiry Is Increasing —Shape Needs 10,000 Tons

Seattle—Steel tonnages awarded this week in the Pacific Northwest were relatively small but the market is encouraged by development of considerable new work. Contracts pending are of unusual size and the month is expected to show totals that will bear comparison.

Bars, Plates and Shapes

Local steel mills report unchanged operations. Considerable tonnages in car lots have been booked and while no large projects involving reinforcing have developed several important jobs are pending. Additional orders for track spikes and rail plates are expected soon, as railroads prepare for next year. Merchant bars are slow with prices unchanged at 2.35c while reinforcing bars are steady at 2.30c. Northwest Steel Rolling Mills has booked 130 tons for the Commercial Tire Co. building, Seattle, and small orders for the Monroe Reformatory and other miscellaneous jobs. General contract has been awarded for the 7-story apartment hotel for Pacific Homes Inc., Seattle, to be of reinforced concrete. Puget Sound Navy yard is calling bids for furnishing an unstated tonnage of reinforcing material.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Mill prices of plates range from 2.10c up and shapes are unchanged at 2.25c. Plate awards this week totaled 500 tons, including 300 tons to the Willamette Iron & Steel Works, Portland, Oreg., for six digesters and two accumulator tanks for the sulphite pulp mill at Longview, Wash., for the Weyerhaeuser Timber Co. United States Steel Products Co. has the contract to furnish State of Washington 200 tons of sheets for auto license plates. Beall Tank & Pipe Co., Portland, Oreg., has booked a small tonnage for Bremerton, Wash. Birchfield Boiler Co., Tacoma, Wash., is low bidder on 600 tons of 30-inch electric welded pipe for Tacoma. Puget Sound Machinery Depot, Seattle, has a sub-contract from the Western Pipe & Steel Co., San Francisco, to fabricate 1500 tons of 66-inch riveted steel pipe for the two Seattle water system jobs, the San Francisco plant to furnish 6200 tons of lock bar for the same project. Bethlehem Steel Co. has the contract to furnish the material used by the Puget Sound Machinery Co. and also 1800 tons involved in the Anacortes pipe line job, also held by the local plant.

While no structural jobs involving 100 tons were awarded this week, this branch of the industry is in line for work of large proportions. Two highway jobs, bids Nov. 25, require 200 and 100 tons. The navy yard warehouse at Bremerton, Wash., bids Nov. 20, covers 300 tons. Local plants are preparing estimates for 4000 tons in the Ford Motor Co.'s Seattle assembly plant, bids to be opened at Detroit Nov. 17. Voters have approved a bond issue for approaches to the University bridge, Seattle. Tonnage involved is 1200 tons. Bidding $1,677,047, Hodgson, King & Marble in conjunction with Dawson, Wade & Co., Ltd. were low for the Burrard street bridge, Vancouver, B. C. Award is pending. This contract totals 3200 tons of shapes and 2000 tons of reinforcing bars. Bids are in and award is pending for 300 tons for crest gates for Rock Island dam project.

Plate Award Is Feature

San Francisco—*(By Air Mail)*—Featuring activity in the Pacific coast iron and steel markets this week, was the award of of 1700 tons of plates for a 38 to 54-inch welded steel pipe line for Los Angeles, placed with the Western Pipe & Steel Co., San Francisco, and the opening of bids on 4500 tons of shapes for 600 car underframes for the Pacific Fruit Express Co.

Bars, Plates and Shapes

A fair tonnage of reinforcing bars was reported booked, while some heavy tonnages are pending. Awards included 325 tons for a building in Berkeley for the University of California, placed with the Pacific Coast Steel Corp., 200 tons for a theater in San Francisco, booked by the Concrete Engineering Co., and over 300 tons for seven bridges in Oregon awarded to unnamed interests. New inquiries include 150 tons for a theater in Billings, Mont. Los Angeles and San Francisco warehouse prices continue firm at 2.50c, base, on carload lots.

Most plate bookings consisted of lots less than 100 tons, but the total exceeded 5000 tons.

Large Line Pipe Orders Reward Electric Welding

(Concluded from Page 25)

Steel pipe has advantages over cast iron pipe in ability to withstand higher unit stresses, greater flexibility adapting it to rough terrain and possibility of laying it first on the surface and later dropping into a ditch. Cast iron pipe must be laid permanently at first.

Cast iron pipe resists soil corrosion best but this factor is not met often or for long distances. In ordinary soils steel pipe has a life of 15 years or more, while in very corrosive soils two years may be the limit, though protective coatings will give 5 years life.

Pipemakers are keeping pace with developments in the petroleum industry and great capacity for production of pipe by seamless and electric methods has been built, adequate for demand now in sight.

Important natural gas and gasoline pipe lines contemplated or under construction include the following: Natural gas line, 24 inches, 1000 miles, from Texas panhandle to Chicago by Doherty, Insull and other interests; natural gas line, 24 inches, 1250 miles, Texas panhandle to Indianapolis, by Missouri-Kansas Pipe Line Co.; natural gas line, 20 inches, 850 miles, Texas to Omaha and Minneapolis, by Western Natural Gas Co.; natural gas line, 24 inches, 700 miles, to Des Moines, Iowa, by Missouri Valley Natural Gas Co.; crude oil line, 10 inches, 1500 miles, Cushing, Okla., to Cincinnati and Pittsburgh; crude oil line, 8 inches, 800 miles, Borger, Tex., to Kansas City and St. Louis, by Phillips Petroleum Co.; gasoline line, 6 and 8 inches, 1115 miles, Okmulgee, Okla., to Kansas City and Chicago; crude oil line from Cushing, Okla., to St. Louis and possibly further, by Standard Oil Co. of New Jersey, through the Ajax company, a subsidiary. These lines, without lateral or feeder lines, require about 1,200,000 tons of steel pipe.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2 points less. Wrought iron pipe, Pittsburgh base.

BUTT WELD

	Steel		Iron	
In.	Blk.	Gal.	In.	Blk. Gal.
½	58	44½	½	23 5
¾	62	50½	¾	28 11
1—3	64	52½	1 and 1¼	31 15
			1½ and 2	35 18

LAP WELD

2	57	45½	2	23 9
2½—6	61	49½	2½—3½	28 13
7—8	58	45½	4—6	30 17
9—10	56	43½	7 and 8	29 16
11—12	55	42½	9—12	26 11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13 +48
¾	60	49½	½	23 7
1—1½	62	51½	¾	28 12
2—3	63	52½	1—2	34 18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29 13
2½—4	59	48½	2½—4	34 20
4½—6	58	47½	4½—6	33 19
7—8	54	41½	7 and 8	31 17
9—10	47	34½	9—12	21 8
11—12	46	33½		

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f.o.b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill

Random lengths over 5 ft. 55%
Selected lengths, 1 to 18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir..... $37.00 to 38.00
Four-inch, Birmingham..... 41.00 to 42.00
Four-inch, Chicago ..... 49.20 to 50.20
Six to 24-inch, Chicago..... 45.20 to 46.20
Six-inch and over, N. Y. .... 38.50 to 40.50
Four-inch, New York ..... 41.50 to 42.50
Stand. fittings, Bir. base..... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga..	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.85c
Detroit	3.00c
Houston	3.00c
Los. Ang.	3.40c
New York††..	3.10c
Philadelphia .	2.60c
Pittsburgh	2.75c
Portland	3.15c
San Frans. ..	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga..	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York††..	3.10c
Philadelphia .	2.60c
St. Louis	3.15c
Tulsa	3.65c

REINFOR. BARS

Baltimore 2.50c-3.31c	
Boston	3.265c
Buffalo	2.95c
Chattanooga..	3.10c
Cincinnati	3.15c
Cleveland ..2.25c-2.44c	
Detroit	3.00c
Houston	3.00c
Los Ang. cl....	2.40c
Los Ang. lcl..	2.70c
New York..2.65c-3.10c	
Phila. 2.40c-3.00c	
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young. 2.30c-2.60c	

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.40c
New York	3.10c
Philadelphia .	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles..	3.40c
New York	3.30c
Philadelphia .	2.50c
Phila. floor....	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	9.915c
Buffalo	3.50c
Chattanooga..	3.60c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.10c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
New York	3.40c
Portland	4.00c
Phila.*†	3.05c
Pitts.**	2.75c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.75c
Boston	4.70c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	4.05c
Clev.***	3.75c
Detroit	3.75c
Los Ang.	4.70c
New York...3.55c-3.65c	
Phila.*†	3.60c
Pitts.**	3.40c
Portland	5.00c
San Fran.	4.35c
Seattle	5.00c
St. Louis	4.05c
St. Paul	3.545c
Tulsa	4.45c

NO. 24 GAL. SHEETS

Balt.*†	4.25c
Boston	5.45c
Buffalo 4.40c-4.60c	
Chicago (local del.)	4.35c
Chicago (outside)	4.35c-4.60c
Cincinnati	4.90c
Cleveland***..	4.35c
Detroit	4.25c
Houston	5.40c
Los Ang.	5.10c
New York	4.25c
Phila.*†	4.15c
Pitts.**	4.00c
Portland	5.50c
San Fran.	5.00c
Seattle	5.50c
St. Louis	4.60c
St. Paul	4.23c
Tulsa	5.35c

BANDS

Baltimore	3.50c
Boston 4.015c-5.00c	
Buffalo	3.50c
Chattanooga..	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.10c
Det. 3/16-in. & lighter....	3.30c
Houston	3.65c
Los Ang.	4.30c
New York	3.40c
Philadelphia .	2.90c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston 5.50c-6.00c	
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.65c
Det. No. 14 & lighter ..	3.80c
New York	3.75c
Philadelphia .	3.15c
Pittsburgh	4.10c
Seattle	5.15c
St. Paul	3.70c

COLD FIN. STEEL
Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San. Fran.(a)	4.25c
Seattle (a)....	4.75c
St. Paul (a)..	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)..	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
Phila. (c).....	4.85c
New York	5.05c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

195 Pages, 6″ x 9″
46 Illustrations

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by
Wallace G. Imhoff

Detailed list of contents, indexed

THIS book covers many phases of pickling room practice and construction and maintenance of pickling equipment. It is written in a manner that will appeal to practical picklers in the sheet, tin plate, strip, pipe, wire, seamless tube, enameling, foundry, hollow ware, galvanizing and lead-coating industries. The author, Wallace G. Imhoff, was for five years industrial fellow, investigating pickling and galvanizing at Mellon Institute of Industrial Research, University of Pittsburgh, Pittsburgh.

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101-I. D.

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 9.50c, del., Conn. for copper

Sheets	
Yellow brass (high)	16.62½
Copper, hot rolled	19.25
Lead, full sheets (cut ½c more)	9.00
Zinc sheet (100-lb. base)	9.50
Tubes and Pipes	
Seamless yellow brass (high)	21.50
Seamless copper	21.62½
Rods	
Yellow brass (high, full turnings)	14.87½
Naval brass	17.00
Anodes	
Copper, untrimmed	16.75
Wire	
Yellow brass (high)	17.12½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	6.75 to 7.00
Chicago	6.25 to 7.50
Cleveland	6.50 to 7.50
St. Louis	6.50 to 6.75
Heavy Yellow Brass	
New York	4.50 to 4.75
Heavy Copper and Wire	
New York	7.25 to 7.75
Boston	7.25 to 7.50
Chicago	7.50 to 7.75
Cleveland	7.00 to 7.50
St. Louis	6.25 to 6.75
Red Brass Borings	
New York	6.25 to 6.50
Yellow Brass Tubing	
Cleveland	4.00 to 4.50
Light Copper	
New York	6.50 to 6.75
Chicago	6.25 to 6.75
Cleveland	6.00 to 6.50
St. Louis	6.50 to 6.75
Light Brass	
Boston	3.25 to 3.75
Chicago	4.00 to 4.25
Cleveland	2.50 to 3.00
St. Louis	3.50 to 3.75
Zinc	
New York	2.00 to 2.25
Cleveland	1.25 to 1.50
St. Louis	2.00
Aluminum	
Clippings, soft, Cleveland	11.50 to 12.00
Clippings, hard, Cleveland	8.00 to 9.50
Borings, Cleveland	4.75 to 5.00
Mixed cast, Cleveland	6.00 to 6.50
Mixed cast, Boston	5.50 to 6.00
Mixed cast, St. Louis	6.00

Secondary Metals

Remelt aluminum No. 12	13.50
Brass ingot, 85-5-5-5	10.00

Metals

Zinc Prices Rise Further and Copper Position Strengthens—Tin Continues Weak, However

New York—The recent recovery of zinc prices has been extended further during the past week and the copper market has strengthened; otherwise, the metal market has shown little change. Buying of zinc has fallen and so the rise in the price appears to have ended. Domestic buying of copper also has dropped but export purchases continue large.

Shipments of metals show no pronounced change, but consumption apparently is easing off. Production has shown little change but copper and zinc production in November probably will be lighter, while production of tin is expected to be a little heavier.

Conditions in the copper and zinc industries evidently are being put on a sounder foundation, as low prices have compelled producers to bring production more nearly in line with consumption, whereas heretofore they have lived largely in the hope consumption would return to the level of production.

Copper—Producers have withdrawn from the market at 9.50c, Connecticut, as they have sold well at this price. It appears as if further buying at this time would be largely speculative and therefore producers do not feel obliged to accept it. But some producers feel the time is not yet right for a higher price, and so the rise that otherwise might have come quickly has been delayed. Domestic demand has been less insistent, but there have been some inquiries, mostly for distant positions. Export buying has continued heavy, much still for relatively early positions.

Zinc—Prime western has sold up to 4.40c, East St. Louis, a rise of 40 points in two weeks. A few days ago some asking prices were 4.42½c to 4.45c, but little metal was sold above 4.40c. Users are well supplied for the time being. Smelters are said to have curtailed their output further and that this is the essential factor back of the current strength. The ore market remains at $26 a ton, due to light demand for ore and relatively large production. It is thought that the mines will be forced to curtail further. October statistics show that stocks of slab zinc have continued to accumulate.

Tin—Prices have fluctuated mostly between 25.50c and 26.00c, with a generally weak tendency and very little demand. Users are thought to be waiting for a new low price before buying. Stocks here and in England continue to fall, but unreported stocks are believed to be larger.

Lead—Business is routine but prices are steady to firm.

Aluminum—New business is inactive but prices are unchanged.—*Daily Metal Trade.*

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Delivered	
Sulphate of ammonia	$1.90

By-Product Prices Firm; Buying Slumps Slightly

New York—Light oil distillates buying has slumped slightly, but with production still curtailed prices are firm. Expected price increases have not materialized, however. Dullness in autmotive demand accounts for slowness in toluol and benzol. Phenol demand is only fair, but is well spread. Prices are firm, bulk of business being at 17 cents. Some small lot material is going 1 cent higher. An increase in contracting for next season's naphthalene requirements is noted. Prices are firm and unchanged.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
Nov. 5	9.50	9.62½	9.37½	25.60	26.00	5.10	4.95	4.37½	22.90	7.12½	35.00
Nov. 6	9.50	9.62½	9.37½	25.75	26.12½	5.10	4.95	4.42½	22.90	7.12½	35.00
Nov. 7	9.50	9.62½	9.37½	25.70	26.10	5.10	4.95	4.42½	22.90	7.12½	35.00
Nov. 8	9.50	9.62½	9.37½	25.50	25.87½	5.10	4.95	4.42½	22.90	7.12½	35.00
Nov. 10	9.50	9.62½	9.37½	25.45	25.85	5.10	4.95	4.40	22.90	7.12½	35.00
Nov. 11	9.50	9.62½	9.37½	25.30	25.75	5.10	4.95	4.37½	22.90	7.12½	35.00

Europe

Better Bookings by British Engineers for South Africa—Pig Iron Exports Improve

London — (*By Radio*) — A contract for building a steelworks in South Africa has been divided between Middlesbrough engineering firms and the German firm, Demag. The British share of this work is valued at £1,800,000 ($9,000,000). Contracts also have been placed by British railroads and the Mersey docks authorities.

Pig iron is dull, with Continental and Manchurian competition felt. Exports of iron for October were 10,973 tons, the highest for the year. Hematite iron has been sold to Italy and Denmark. Trade in the Midlands is dull, foundries using only small tonnages. Luxemburg pig iron is being delivered here at £3 7s 6d.

Tin plate mills are operating at 50 per cent but some works are well booked. Galvanized sheets are dull.

Paris reports domestic trade is active but prices have been so uneconomic that the foundry pig iron syndicate has broken up. Conditions are dull in Germany. Trade with South Africa and the Far East is improving. Egypt has ordered 20 locomotives. Brussels reports Belgian markets are poor but that the price recession appears to be near its end.

Better Export Selling Aids England; Continent Dull Despite Low Prices

London—The iron and steel export markets continue depressed. Continental export prices have reached such low levels that most business is done at a loss, and, in fact, a number of works in Belgium, France, and more particularly in Germany, are refusing to take orders at these prices. The time will come, however, when those firms which are taking orders below cost will not be able to stand the strain, and prices are bound to take a turn for the better.

It is practically impossible for British steelmakers to meet foreign competition, and in the British market Continental steel can be delivered at prices considerably below those ruling in the country; for instance, 2-inch billets can be obtained delivered in the Birmingham district at about £4 7s ($21), while the domestic price for British billets in soft steel is around £5 15s ($27.85).

Continental beams are offered in Birmingham at about £5 ($24.20) delivered, whereas the British product is quoted at £8 10s ($41). Merchant bars from the continent are about £5 5s ($26.55) delivered, Birmingham, against the British price of £7 12s 6d ($36.95). Continental plates 3/16-inch and upwards range from £5 15s to £6 ($27.75 to $29), against British quotation of £8 15s ($42.25).

It must be noted, however, that to British consumers who undertake to use nothing but British steel, rebates of from 10s to 12s 6d ($2.43 to $3.04) are granted. It also must be noted that the Continental steel offered is of basic bessemer quality.

In Great Britain, prices are being maintained at their previous level, and exports of Middlesbrough pig iron during the month have increased. There also have been some sales of East Coast hematite, which have been effected on the Continent and more particularly in Italy, but it is understood that concessions have been made on the price of £3 11s ($17.20).

Braithwaite & Co. Ltd., London, Alexander Findlay & Co. Ltd., Motherwell, Tees-Side Bridge & Engineering Co. Ltd., Middlesbrough, and Orr, Watt & Co. Ltd., Motherwell, have shared an order for 22 bridge spans and one foot-bridge for the South African railways.

Orders for locomotives and freight cars have been received by the Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd., Birmingham, Kitson & Co. Ltd., Leeds, and the North British Locomotive Co. Ltd., Glasgow, these orders being for Brazil and Central Africa. Swan, Hunter & Wigham Richardson Ltd., Newcastle, have obtained a contract for a passenger steamer for Jugo-Slav owners and a tank steamer for American owners.

Reports from the Continent relating to the export markets continue unsatisfactory. Markets are sluggish and the tendency of prices is to drop further. Merchant bars now are quoted at less than £4 ($19.40) per ton, f.o.b. Antwerp. Beams are about £3 13s ($17.70). Hoops and bands range from £4 7s 6d to £4 10s ($21.15 to $21.80). Quarter-inch plates are about £4 13s ($22.50).

If one compares the price of merchant bars, now around £3 19s ($19.15), with the price of £5 5s ($25.20) prevailing at the beginning of the year, one will note that the drop in the course of the first ten months of the year is £1 6s ($6.30) per ton, or a decrease of nearly 25 per cent. Prices of other products have dropped in proportion.

Belgian Exports Slow

The Belgian export market is practically stagnant, the only note of interest being an order for 12,000 tons of rails for the Belgian Congo. In France little interest is taken in the export market, although some works would like to take orders if they were at remunerative prices.

However, the decision taken last week in Paris by the directing committee of the steel entente that the life of the entente shall be definitely prolonged until the end of the year, on the understanding that French territory will be protected against imports from neighboring countries, should have a beneficial effect on French trade.

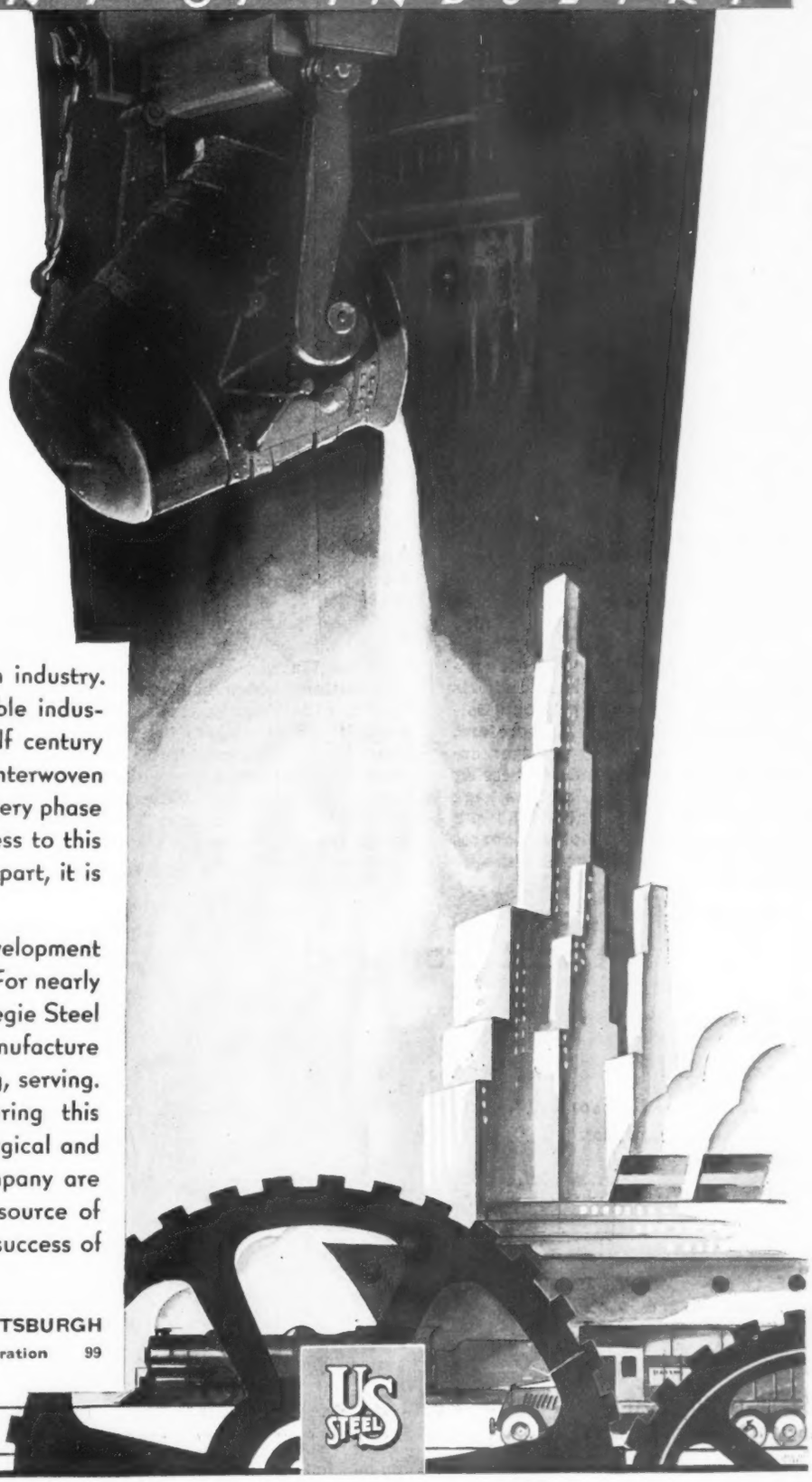
Conditions in Germany are dull, and most works have withdrawn from the export market. However, 1-millimeter sheets recently have been sold at £6 4s ($30) f.o.b. port of shipment. Angles have been sold at £5 7s 6d ($16), 28-gage hoops at £10 10s ($53). It is reported that a tonnage of 24-gage sheets has been sold to the United States at £7 15s ($37.50).

German Steel Market Is in Unfavorable Condition

Berlin—Quarterly figures of the United Steel Works Co., just published, make an unsatisfactory showing, in accord with predictions recently made by STEEL. Unfilled orders, which at the end of June stood at 51.9 per cent of the month-

STEEL

SERVANT OF INDUSTRY



STEEL is the keystone of modern industry. Trace the history of the remarkable industrial development of the past half century and you will find it inseparably interwoven with the development of Steel. Every phase of modern activity owes its progress to this industrial giant. If Steel is not a part, it is a means.

And inseparably linked with the development of Steel is the name "Carnegie". For nearly three-quarters of a century, Carnegie Steel Company has engaged in the manufacture of Steel—experimenting, learning, serving. The knowledge accumulated during this time, and the mechanical, metallurgical and engineering resources of this company are yours to summon. A dependable source of supply plays no small part in the success of a product or of an enterprise.

CARNEGIE STEEL COMPANY - PITTSBURGH

Subsidiary of United States Steel Corporation 99

US STEEL

CARNEGIE

ly average of 1928-29, had declined by the end of September to only 44.3 per cent those of the preceding year. The value of total sales during fourth quarter aggregated only 272,500,000 marks, against 290,800,000 marks the previous quarter and 402,500,000 marks a year before.

The number of workers of the United Steel Works Co. during the past year has declined from 176,716 to 134,708, this decrease having proceeded at a quicker rate than that of the rate of production.

German Industry Stagnant

It cannot be doubted that the position of the German heavy industry is unfavorable. Both domestic and foreign orders are lacking, all the more so because consumers are looking forward to a new cut in prices. A strike already has broken out in the Berlin metal industry, as wages there are to be reduced by 8 per cent, but it is anticipated that this strike will soon be settled. Undoubtedly, when coal prices become cheaper, domestic iron prices also will be reduced.

In the case of bands, domestic consumers already have stated it is more attractive for them to buy Belgian bands. Belgian steel, therefore, is entering Germany to a larger extent than previously and is pressing on the market. Machine makers have curtailed activities to about 52 per cent, while buying from other sources is limited. Merchant bars and shapes are slack. Semifinished goods also are quiet.

Export sales continue limited, troubles in South America and the Far East handicapping business. Some lots of merchant bars have been sold at about £4 3s ($20.20). Structural shapes are depressed, only £3 16s ($18.50) being asked. Sheets are weaker, and pipes and wire products in particular have declined. German export prices for wire are about as follows: wire nails £6 ($29.20); plain wire, £6 1s ($29.44); annealed wire, £6 11s ($31.88); barbed wire, £9 16s ($47.70).

Polish Position Better

Berlin—It is reported from Warsaw, Poland, that during September the steelworks syndicate received orders for 44,000 metric tons of rolled steel, against 35,000 tons in August. Demand for nuts and bolts substantially decreased, but business in structural steel was active. The railroads passed important orders for rails.

From Warsaw it is reported that negotiations which had been carried on for nine years in order to reinstate the agreement for seamless tubes have been successfully concluded. The new syndicate will include the united works of Laura & Koenigs, Sosnovitz, Bismark, Huta Bankowa and Modrzejow.

From Amsterdam it is reported that the ministry of commerce has appointed a committee to inquire into the situation of the Dutch iron and steel industry. The committee has recommended that a rolling mill works be constructed, and a works for the manufacture of wire. This would enable the Dutch industry to avoid having to import a considerable tonnage of plates, sheets and wire products.

German Output Shrinks

Berlin—German iron and steel production figures for September showed a substantial decrease on previous figures, and such a low level has not been reached since 1924 for pig iron and 1923 for steel ingots and castings. The output of rolled products in September was 576,948 metric tons, as against 619,861 tons in August. Comparative figures follow, in metric tons:

Mon. ave.	Pig iron	Steel ingots and castings	Finished steel
1913*	909,640	993,640	970,240
1927	1,091,875	1,359,225	1,069,930
1928	984,700	1,209,770	880,690
1929	1,116,730	1,353,820	940,425
1930			
Jan.	1,092,206	1,275,023	896,076
Feb.	964,517	1,176,435	797,899
March	1,007,576	1,201,206	834,349
April	901,358	1,033,383	737,355
May	859,657	1,034,088	735,741
June	767,395	859,310	603,378
July	770,928	905,763	664,401
August	739,083	896,514	619,861
Sept.	652,863	814,117	576,948

*Present boundaries.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, November 10	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$15.43	3 3 6*	$12.39	2 11 0	$12.39	2 11 0	$13.37	2 15 0
Basic-bessemer	15.92	3 5 6	12.15	2 10 0	12.15	2 10 0	13.37	2 15 0
Hematite, Phosphorus 0.02-0.05	17.25	3 11 0	.....	.....	.....	.....	17.74	3 13 0
SEMIFINISHED STEEL								
Billets	$27.95	5 15 0	$16.04	3 6 0	$16.04	3 6 0	$16.52	3 8 0
Wire rods	41.31	8 10 0	29.16	6 0 0	29.16	6 0 0	29.16	6 0 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	$31.59	6 10 0	$32.08	6 12 0
Merchant bars	1.68c	7 15 0	.87c	3 19 0	.87c	3 19 0	.87c	3 19 0
Structural shapes	1.68c	7 15 0	.80c	3 12 6	.80c	3 12 6	.81c	3 14 0
Plates, ship, bridge and tank	1.79c	8 5 0	1.02c	4 13 0	1.02c	4 13 0	1.05c	4 15 0
Sheets, black, 24 gage	1.90c	8 15 0	1.80c	8 3 9	1.80c	8 3 9	1.98c	9 0 0
Sheets, galvanized, 24 gage, corrugated	2.52c	11 12 6	2.35c	10 13 9	2.35c	10 13 9	2.64c	12 0 0
Bands and strips	2.17c	10 0 0	.98c	4 8 9	.98c	4 8 9	1.05c	4 15 0
Plain wire, base	2.06c	9 10 0	1.29c	5 17 6	1.29c	5 17 6	1.33c	6 1 0
Galvanized wire, base	3.04c	14 0 0	1.60c	7 5 0	1.60c	7 5 0	1.61c	7 6 0
Wire nails, base	2.39c	11 0 0	1.32c	6 0 0	1.32c	6 0 0	1.32c	6 0 0
Tin plate, base box 108 pounds	$ 4.13	0 17 0	.....	.....	.....	.....	$ 8.75	1 15 0
Domestic Prices at Works or Furnace—Last Reported				Francs		Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$15.43	3 3 6	$19.25	490(2)	$16.18	580	$19.79	83
Basic pig iron	15.80	3 5 0	20.63	525(1)	12.83	460	21.10	88.50
Furnace coke	3.16	0 13 0	6.60	168	5.30	190	5.13	21.50
Billets	27.95	5 15 0	21.62	550	16.96	610	28.01	117.50
Standard rails	1.79c	8 5 0	1.46c	810	1.61c	1,240	1.47c	136
Merchant bars	1.68c	7 15 0	.98c	545	.96c	735	1.48c	137
Shapes	1.84c	8 10 0	1.12c	620	.94c	725	1.45c	134
Plates, ship, bridge and tank	1.95c	9 0 0‡	1.46c	810	1.11c	850	1.65c	153
Sheets, black, 24 gage	2.28c	10 10 0	2.63c	1,460	2.41c	1,850	1.36c	126
Sheets, galvanized 24 gage, corrugated	2.52c	11 12 6	3.74c	2,075	2.60c	2,000	3.67c	340
Plain wire	2.06c	9 10 0	1.76c	975	2.15c	1,650	2.45c	217
Bands and Strips	2.17c	10 0 0	1.27c	705	1.37c	1,050	1.72c	159

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.16) f. o. b. Ferromanganese £12 5s 0d ($59.54) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.54) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Strength and density *in both light and heavy sections* . . . . obtained with less than 1% Nickel

EVERY foundryman knows what a difficult problem it is to cast a pulp press scroll like the one illustrated. The heavy base and neck must be sufficiently dense to meet a tensile strength specification of 32,000 lbs. p. s. i. The lighter fins must be readily machinable.

By adding only 0.50% Nickel to a proper base mixture, the Kilby Manufacturing Co. has solved successfully this intricate casting problem. At a slight additional cost for the small percentage of Nickel, castings are produced which are not only machinable but are also stronger and longer wearing.

Nickel Cast Iron—a better material for modern needs—is helping many foundrymen and manufacturers secure improved castings that meet today's exacting requirements.

Our casting specialists will gladly discuss your problems with you.

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A BETTER MATERIAL FOR MODERN NEEDS

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Nickel Cast Iron pulp press scroll cast by KILBY MANUFACTURING CO., Cleveland, Ohio, for American Beet Sugar Co.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

Machinery

RESIGNATION to a long, hard winter marks the machine tool industry as a result of finding itself in the midst of the last quarter without tangible signs of business improvement. All the big buyers are out of the market until after the first of the year. A general tendency to patch up worn and superannuated equipment to tide over this emergency is postponing much re-equipment business which had been counted on up until recently. Inquiries are being followed up vigorously by salesmen, who are finding it increasingly necessary to have important engineering features plus the ability to discuss them intelligently.

New York—Machine tool buying is spotty, and while most dealers and builders note slight, if any, improvement in orders, some report gain in inquiry. This gain is not general, however. Buying is confined primarily to special machines with engineering features which promise saving in production costs, increase in output or improved operation. Dealers specializing on such improved engineering details appear to be getting the bulk of the business. Few formal inquiries are being made. Competition is keen and sales forces are keyed up to go after every possible order.

Some of the largest buyers of machine equipment continue to remain out of the market. Few new plant unit installations are being made, bulk of interest being confined to replacements which offer advantages over the machine replaced. It is generally admitted that much obsolete and worn out machinery is being patched up to keep it in service during this period of curtailed production. The general feeling is that resumption of active machine tool buying depends upon replacement business rather than upon any large demand due to plant expansion. As a result of cautious buying and exhausted budgets covering the remainder of the year, most machine builders are operating with skeleton forces on short schedules. Ball bearing plants in Connecticut are averaging no more than three days production a week.

Pittsburgh—Machine tool activity is limited to occasional orders for individual items and to scattered inquiry involving only small volume of equipment. Neither inquiry nor buying shows improvement over the past 30 days. Users show some interest in special tools having cost-saving possibilities, but this interest is tempered to a certain extent by the desire to limit capital expenditures. This tendency is most evident in purchases of the commoner grades of tools. No lists of consequence are pending. Railroad inquiry is lacking despite better prospects for improved activity in car building shops.

Cleveland — With organizations pared to the bone, and with these curtailed forces operating only on part time, Cleveland machine tool builders foresee but little business activity during the winter months. However, they are building for the future by redesigning and improving both machines and tooling equipment. The continuation of active inquiry is keeping quotation departments busy and quotations are being followed up actively by salesmen, to insure future business in an increasingly competitive market. Salesmen are finding it vitally necessary to have a thorough knowledge of the engineering features of their lines.

Several industries are being watched with keen attention. The early introduction of decidedly different 1931 models of certain automobiles is expected to stimulate equipment buying, provided that the public reacts with any degree of enthusiasm. This movement already has given impetus to sheet metal working and body building in the Cleveland district. Hopes also are expressed for new equipment business with builders of shoe machinery and textile machinery, in view of reports of recovery.

While the employment situation in the metal working industries has not improved, the general situation has been relieved materially. In the recent election Cleveland stood in the forefront of cities which appropriated substantial amounts of money for public works.

Chicago — Machine tool dealers have entered November with no carry-over from the previous month, and no inquiries of consequence. Having written off the months that normally are the most active, several dealers frankly discount any general improvement before March, but others are more optimistic. One western machine tool builder is working two days a week, while others are on three to four day schedules. Servicing demands and sales of small parts and accessories remain active. A number of used tools also were moved from floors during the week, including several large lathes. Sheet metal working tools, including light shearing equipment, were fairly active. Several inquiries have appeared in the Denver district, including a 16-inch lathe for a school shop. A Denver manufacturer also purchased a friction saw. Announcement of the Lane Technical High school inquiry in Chicago is awaited with interest as nine shops are to be equipped. Chicago board of education will readvertise for the lathes and radial drills for Austin High school, and has completed estimates for the Lane school. Machinery is being installed by the Jefferson Paper Bag Co., a newly organized Chicago concern, which now is occupying space in a power building in the Clearing industrial district.

Worcester, Mass.—The machinery market in general remains unchanged from last week and grinders are slow. Some Russian business continues to come in an order for three large diesinkers having been received during the past week. Chicago has been the source of orders for a couple of milling machines and two drum lathes. Small, scattered orders still characterize the situation.

Installs New Furnaces for Heating Wide Slabs

Republic Steel Corp., Youngstown, O., recently placed in operation three continuous slab heating furnaces which are the first units to employ triple firing and zone control and to be used for heating wide slabs for a plate or stripsheet mill. Each furnace has a normal capacity of 20 tons an hour but a 40 per cent overload has been obtained without change in the quality of heating.

Weirton Steel Co., Weirton, W. Va. has a triple-fired bloom heating furnace nearing completion which will have a capacity of 30 gross tons of blooms an hour, heating from cold to rolling temperature. The unit serves the new structural mill.

Two triple-fired, zone-controlled, continuous billet heating furnaces have been placed in initial operation at the Birmingham, Ala., plant of the American Steel & Wire Co. They are fired with natural gas and have a normal capacity of 15 tons an hour. All foregoing furnaces were designed and constructed by the Rust Engineering Co., Pittsburgh.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

NEW BRITAIN, CONN. — Vulcan Iron Works, 63 John street, will take bids on revised plans for a 1-story, 70 x 175-foot plant, estimated to cost $50,000. M. J. Unkelbach, 52 West Main street, is architect.

SOUTH NORWALK, CONN.—Segal Lock & Hardware Co., 12 Warren street, New York, plans to expand the plant of its subsidiary, Universal Safety Razor Co., for the manufacture of a new single unit safety razor.

BOSTON—Mack Battery Co., 664 Harrison avenue, is inquiring for one direct-current electric drill, one-half or three-fourths-inch size.

FITCHBURG, MASS.—Crocker, Burbank Co., 545 Westminster street, plans to expend $40,000 for power plant extension. F. J. Sill, East Main street, Westboro, Mass., is engineer.

FRAMINGHAM, MASS.—A. C. Winch, chairman of the board of public works, will let contract soon for a pumping station and equipment. Cost is estimated at $40,000. S. Dyer, town hall, is engineer.

WEST BARNSTABLE, MASS.—Cape Cod airport, Fred R. Evans manager, is building a machine shop.

New York

BROOKLYN—Metal Foundry Corp. has been incorporated with 200 common shares by M. Kelitman, 154 Nassau street, New York.

BROOKLYN—Plant of Clarostat Mfg. Co., manufacturer of radio equipment, 285 North Sixth street, recently was damaged by fire.

BROOKLYN—Plant of the Woodhaven Metal Stamping Co. Inc., 62 Schenectady avenue, recently was damaged by fire.

JAMESTOWN — Invisible Roll-Ball Caster Co. Inc., 431 Wellman building, advises through M. A. Bissell, president, that the company has been organized to manufacture an invisible caster, featured with a ball bearing principle, and that lease or purchase of a local plant is being considered. (Noted Oct. 23.)

LONG ISLAND CITY—Crane Co., 836 South Michigan avenue, Chicago, will build a warehouse and shop here at Dutch Kills basin and Forty-seventh avenue, at a cost of approximately $430,000. Voorhees, Gmelin & Walker, architects, 101 Park avenue, New York, will receive bids for construction until Nov. 17.

NEW YORK—Poole Engine Corp. has been incorporated with 2500 common shares by Netter, Palley & Netter, 521 Fifth avenue, to deal in machinery.

NEW YORK—B.C.P. Scrap Iron Co. has been incorporated with $5000 capital by M. Alter, 2 Lafayette street, to deal in metals.

NEW YORK—Gare Co. has been incorporated with $100,000 capital by Parmly, Stetson & Woodward, 75 West street, to deal in machinery.

NEW YORK—Procter & Gamble Co., 17 Battery place, will award contract for a 1-story boiler house addition, 30 x 70 feet. Plans are private. Estimated cost, $40,000.

SYRACUSE—Plant of the Page Engineering Co., 1305 South Townsend street, recently was damaged by fire.

Pennsylvania

CORRY—McInnes Steel Co. Ltd. advises through Harry B. Smith, secretary and treasurer, that the company is being reorganized for expansion of operations at its East Main street plant. Company manufactures crucible tool steel.

EASTON—Sirber Lighting Fixture Co. Inc. has been incorporated with $10,000 capital by Isidore S. Gruber, 2039 Hughes avenue, New York, to manufacture and sell lighting fixtures and other metal articles.

ERIE—Erie Unit Parts Inc. has been incorporated with $20,000 capital by A. A. Albaugh, Warren, Pa., to manufacture and sell parts and accessories for motor vehicles and airplanes.

HANOVER—Eastern Valve Co. has been incorporated with $30,000 capital by J. V. Emig, to manufacture and sell tools, forgings, castings and machinery.

PHILADELPHIA—L. J. Bordo Co., Twelfth and Thompson streets, has been incorporated with $50,000 capital by Henry N. Christmas, 5610 North Thirteenth street, to manufacture and sell valves and gages and to cast metal articles.

New Jersey

HIGH BRIDGE—Exact Level & Tool Mfg. Co. Inc. is planning to build a 1-story addition to be completed next spring. Unit will be used as machine shop. Company manufactures aluminum levels, machinists' levels, tools, rules and squares.

NEWARK—Eastern Air Transport Inc., Newark airport, has leased a site for the construction of hangars and a repair shop. Cost is estimated at $75,000, including equipment.

NEWARK—R. C. Jenkinson & Co. Inc. has been incorporated to expand the company of the same name, adding to and altering its plant for the manufacture of sheet metal and wire goods, at 293 Washington street.

NEW BRUNSWICK—C. & H. Mfg. Co. has been incorporated with 600 common shares by C. Raymond Lyons to manufacture gages.

Ohio

BELLEFONTAINE—New York Central railroad, 466 Lexington avenue, New York, is contemplating the construction of a roundhouse addition here, to be completed next year. Estimated cost, $150,000.

BOWDIL—Bowdil Mfg. Co., N. K. Bowman general manager, will erect a building unit 50 x 200 feet next spring and another, 24 x 200 feet, for heat treating. Plans are private. Company manufactures mine machinery and tools.

CANTON — United Engineering & Foundry Co., Farmers building, Pittsburgh, local plant at Grace avenue northeast and Fourteenth street, proposes to expand its plant and add 125 employes. Cost of erecting and equipping an addition will amount to about $400,000.

CHESAPEAKE—Huntington, W. Va., airport, located here, has been acquired by Howard G. Mayes, Dunbar, W. Va. Hangar for eight planes will be constructed immediately and field improvements costing $10,000 will be made.

CINCINNATI—Truscon Steel Co., 1027 Dixie Terminal building, will erect a warehouse, 80 x 150 feet, on Dellway street. Estimated cost, $20,000.

CINCINNATI—Hauser-Stander Tank Co., Spring Grove and Ammon avenues, proposes to erect a 1-story plant to contain 70,000 square feet of floor space. Lockwood, Greene & Co., Hanna building, Cleveland, are architects.

CINCINNATI—University of Cincinnati, Arthur R. Morgan, chairman of the board of trustees, proposes to build a physics building costing about $400,000. Crowe & Schulte, 2436 Reading road, are architects.

CINCINNATI—Ohio River Motor Boat Co. advises through J. B. Koehler, care of Hotel Alms, that contract for a yacht storage plant with a capacity of 1000 boats has been let to Mason & Shapiro. A machine shop will be included. Reports state the unit will cost $200,000 and will be built on the Ohio river near Coney Island. Roy A. Steinharter is president of the company.

CLEVELAND—Quincy Metal Products Inc. has been incorporated with 250 no par shares by McConnell, Black-

more, Cory & Griffith, Terminal Tower building.

CLEVELAND—Harris, Seybold, Potter Co., 4510 East Seventy-first street, has closed its plant at Derby, Conn., and is transferring operations here and to Dayton, O. Machinery is being moved.

NILES—Niles Corrugating Co. advises through T. J. Fitzgerald, manager, that damage done by recent fire to its plant amounted to $50,000, fully covered by insurance. Definite plans for rebuilding will not be made for several weeks. (Noted Nov. 6.)

TOLEDO—Miller-Sheahan Machinery Co. has been incorporated with 250 no par shares by Joseph O. Eppstein, 610 Ohio building.

Indiana

GREENCASTLE — Greencastle Telephone Co., H. B. Wells manager, proposes to improve its substation facilities at a cost of about $25,000.

NEWCASTLE—Indiana Electric Corp., Tractor Terminal building, Indianapolis, has plans for a substation here. R. E. Brown, 110 North Illinois street, Indianapolis, is engineer. Estimated cost, $25,000.

Michigan

DETROIT—Board of water commissioners will receive bids Nov. 25 for three traveling cranes to be installed in the Springwells station power plant. G. H. Fenkell is chief engineer.

DETROIT—Embe Mfg. Co. Inc. has been incorporated with $5000 capital by Wolf F. Miller, 1559 West Grand boulevard, to manufacture and deal in automotive and other articles.

FLINT—David T. Watkins will build a 2-story warehouse and shop, on Detroit street. George S. Hawes, architect, is preparing plans.

LANSING—McLean Bros. & Williams advise that they have leased a shop for temporary use at 507 East Michigan avenue, and are manufacturing electrical mechanisms for operating brakes on trucks and trailers. Pressed steel channel iron 4½ inches wide, one or two inches deep, with sharp right angle on the concave side, is needed. Other items to be used include small electric motors, screw machine products and battery cable wire. Company may incorporate as the Electric Screw Brake Co. (Noted Nov. 6.)

Illinois

BELLEVILLE—Engine, generating and boiler rooms of the New National Coal Co.'s mine near here recently were destroyed by fire. Estimated loss, $35,000.

CHICAGO—Gene Mfg. Co., 1843 North Ogden place, has been incorporated with $10,000 capital by Curtis W. Carton, 854 North Clark street, to deal in metal novelties and electrical appliances.

CHICAGO—Jenkins Mfg. Co., 3912 North Central Park avenue, has been incorporated with $52,500 capital by Industrial Development Co., to deal in electrical appliances.

CHICAGO—Metal Contact & Mfg. Co., 800 North Clark street, room 411, has been incorporated with $5000 capital by John A. Burke, 69 West Washington street, to deal in foundry supplies.

CHICAGO—Norine Engineering Co., 355 North Union Park court, has been incorporated with $10,000 capital by Charles W. Lamborn, Harris Trust building, to manufacture and sell riveting machines.

CHICAGO—Central States Mfg. & Sales Co., 1870 West Thirty-third street, has been incorporated with $25,000 capital by Hector A. Brouillet, 77 West Washington street, to engage in a machine shop business.

CHICAGO—Cornell Johnson Forge Co., 1659 West Seventy-fourth place, has been incorporated with $25,000 capital by Williams, Bradbury, McCaleb & Hinkle, 1315 Monadnock building, as a manufacturer.

MT. VERNON—Mt. Vernon Tube, Sign & Mfg. Co., Second and Watson streets, has been incorporated with $30,000 capital by L. L. and R. E. Benoist, to deal in neon signs and other articles.

NORTH CHICAGO—Starr Nipple Co., recently noted as planning a plant for the manufacture of pipe nipples, can be reached through Phipps Industrial Land Trust, 39 South LaSalle street, Chicago. New unit is to be 132 x 142 feet and is to be located at 4700 South Richmond street. (Noted Nov. 6.)

PEORIA—Keystone Steel & Wire Co., C. W. LaPorte assistant to the president, South Bartonville, recently noted as planning a new unit, will construct a 1-story warehouse, 300 x 400 feet, at a cost of about $100,000. H. C. Howell, care of owner, is engineer. (Noted July 17.)

QUINCY—American Air Conditioning Equipment Co., 200 North Second street, has been incorporated with $21,000 capital by Fred G. Wolfe, to deal in all types of air conditioning machinery.

Southern States

BIRMINGHAM, ALA. — Chicago Bridge & Iron Works, 1305 West 105th street, Chicago, has let contract for a shop building to be erected at 1500 North Fiftieth street, to Virginia Bridge & Iron Works, Roanoke, Va. Unit will be 160 x 400 feet and will cost about $50,000.

MOBILE, ALA.—McVoy Engine Boiler Development Co. has been incorporated with $100,000 capital by V. P. McVoy, 908 Conti street.

WASHINGTON—Chief of the bureau of yards and docks, navy department, will receive bids Nov. 19 for reciprocating air compressors for naval air stations at Pensacola, Fla., and Cavite, P. I.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids Nov. 18 for band saws, motor-driven engine lathe and spare carbon brushes.

HOLLYWOOD, FLA. — Hollywood Foundry & Machine Co. has been incorporated by M. T. Henjum.

ATLANTA, GA. — Commonwealth Marble & Granite Co., 898 Confederate avenue southeast, will rebuild its plant recently destroyed by fire, and equip new units with conveying and cutting machinery.

CARRS FORK, KY.—Conveyor and machinery belonging to the Wisconsin Coal Co. recently were damaged by fire.

PARIS, KY.—City, George Doyle mayor, is considering construction of a power plant to cost $150,000. Diesel units may be installed.

ALEXANDRIA, LA.—Tri-State Culvert Mfg. Co., D. D. Hagan manager, has leased a site at Third street and Missouri Pacific railway for construction of a plant to manufacture steel culverts.

ARCADIA, LA.—Tooke & Reynolds Co. has let contract to Tudor & Ratcliffe, Alexandria, La., for construction of a power plant. Cost is estimated at $175,000.

NEW ORLEANS—Sewerage and water board, 526 Carondelet street, is completing plans for a new pumping station, 50 x 115 feet, to be erected at Florida and Orleans streets. Estimated cost, $175,000.

BALTIMORE—City council has awarded contract to DeCou & Chidlaw, 857 North Eutaw street, for construction of a 1-story pumping station, 29 x 42 feet, at Eastern avenue and Pennsylvania railroad.

HAGERSTOWN, MD. — Maryland Pipe Supply Co. Inc. is in the market for pipe straightening machines.

CHARLOTTE, N. C.—Charlotte Pipe & Foundry Co., South Mint street, whose plant recently was noted as having been damaged by fire, will rebuild all units immediately. Loss was estimated at $100,000, covered by insurance. All machinery was virtually destroyed. W. Frank Dowd is president of the company. (Noted Nov. 6.)

GOSHEN, VA.—Imperial Fossil Marble Corp., recently organized to establish a plant at Panther Gap, near here, will install conveying, grinding, drilling and cutting machinery. Initial plant unit will cost $85,000.

BONCAR, W. Va.—Electro Metallurgical Development Co. of America, division of Union Carbide & Carbon Corp., Carbide & Carbon building, New York, is reported to have let contract to Rust Engineering Co., Koppers building, Pittsburgh, for plant units here for the manufacture of steel products. Included are 100 x 740-foot furnace building,

75 x 740-foot packing shed, 50 x 120-foot locomotive house, and 40 x 100-foot motor station. Total estimated cost, approximately $2,000,000.

Missouri

CLARKTON—City council is considering erection of a pumping station and tank and purchase of equipment. W. A. Fuller Co., 2916 Shenandoah avenue, St. Louis, is engineer.

KANSAS CITY—Funkhouser Equipment Co., 2425 Jefferson street, has purchased the site it occupies and has started construction of a warehouse, 80 x 100 feet.

NORTH KANSAS CITY—Flexlume Corp., 1100 Military road, Buffalo, manufacturer of neon signs, is reported to have acquired a site at Fourteenth street and Burlington avenue and to have started the construction of a branch plant. Keene & Simpson, Land Bank building, Kansas City, are architects.

PRINCETON—Evoritt & Co. Inc. has been incorporated by Guy and Robert E. Evoritt to manufacture a propeller blade mounting of variable pitch, for aircraft.

ST. LOUIS—Board of public service, 208 city hall, will take bids for the construction of a 90 x 120-foot hangar unit with two lean-to's each 60 x 120 feet, for the St. Louis naval reserve at St. Louis flying field. Cost is estimated at $35,000. L. R. Bowen and A. Osburg, 301 city hall, are engineer and architect, respectively.

Oklahoma

CHICKASHA — Southern Light & Power Co. will build an addition to its substation facilities, 50 x 150 feet. Cost is estimated at $22,000.

LAWTON—City is planning to let contract about Nov. 15 for pumps and electrical equipment and steel tanks as a part of an improvement program costing $550,000 for the municipal waterworks. Burns & McDonnell, Interstate building, Kansas City, Mo., are engineers.

OKLAHOMA CITY — Casinghead Control Valve Co. has been incorporated with $50,000 capital by C. C. Cooke, 512 West Noble street, to manufacture oil field specialties.

OKLAHOMA CITY—Bird Aircraft Corp., 1 Tevercamp street, Glendale, L. I., N. Y., Major Thomas G. Lanphier technical advisor, is reported to be seeking sites here and at Tulsa, Okla. and Wichita, Kans., for a plant.

Texas

BAYTOWN—Humble Oil & Refining Co. has closed bids for the construction of a power plant, 74 x 175 feet.

FT. WORTH—East Texas Engineering & Construction Co. has been incorporated with $6000 capital by A. H. Woodfin, 1011 West Fifth street, to deal in steel products.

FT. WORTH—Gulf, Colorado & Santa Fe railroad, F. Merritt chief engineer, proposes to build a 2-story, 50 x 400-foot freight terminal here at a cost of about $250,000. Plans have been completed.

HOUSTON—Standard Oil Field Supply Co., Morris Rauch president, will build a pipe and machinery warehouse at Maury and Elysian streets.

LUBBOCK—Board of trustees, Texas Technological college, plans to build a new power house unit. Estimated cost, $20,000.

Wisconsin

MADISON—Heller Machine Co. has been incorporated with $25,000 capital by H. F. Steinhauer and J. H. Castle.

MILWAUKEE — Central board of municipal purchases, city hall, is taking bids on one 20-inch drill for the city service shop.

MILWAUKEE—Weimer Welding & Cutting Co., 307 Fourth street, is starting work on a 1-story shop addition, 25 x 100 feet.

MILWAUKEE—Grip-Rite Mfg. Co. has been incorporated with 500 common shares by A. Polachek, 1312 Prospect avenue, to deal in machinery and appliances.

MILWAUKEE—Luther Grinder & Tool Co. has been organized with $100,000 capital to succeed the Luther Grinder Mfg. Co., 285 East Seeboth street, and to expand the manufacture of grinding machinery, tools and hardware specialties.

Find Iron Foundry 3000 to 4000 Years Old

An Italian expedition, which is searching for traces of prehistoric man near Livingstone, Rhodesia, Southern Africa, reports that it has made an unusual discovery in the form of an ancient iron foundry, according to reports to the department of commerce. The site of the foundry is said to have been buried 6 feet deep in an enormous cavern in strata of Palaeolithic age.

Here, some 3000 to 4000 years ago, it would seem some race of superior intellect smelted iron by primitive methods not unlike those known to the present South African Bantu people. The skeletons of men, it is said, prove that the early knowledge of smelting came to Africa during the time of the Bushmen, approximately at the earliest phase of their late stone age culture, the foundry being superimposed directly on a stratum bearing Moustierian implements.

OAKFIELD—Foundry of the Romort Mfg. Co., manufacturer of garage equipment, engines and cleaners, recently was damaged by fire. Loss is estimated at approximately $15,000. Unit will be rebuilt.

SHEBOYGAN—Department of public works has started work on a $20,000 addition to the municipal service building. New tools and a hand operated crane will be installed. Erwin Mohr is city clerk.

TWO RIVERS—City council is considering alterations and additions to its light and power plant. E. J. Donnelly is city manager.

WAUPUN—Oscar Lee, warden of Wisconsin state prison, will propose the construction of a foundry at the prison for the manufacture of manhole covers, cast iron sewer pipe, lamp posts and hydrants.

Minnesota

MINNEAPOLIS — Minneapolis Gas Light Co., 800 Hennepin avenue, will receive bids for a repair and storage unit, four stories, to cost $150,000 with equipment. Ekman, Holm & Co., Phoenix building, are architects.

Iowa

CORALVILLE—Iowa City Light & Power Co., Iowa City, Iowa, plans a power plant addition here. Cost is estimated at $45,000.

Kansas

CHERRYVALE—Edgar Zinc Co., A. S. McMillan president, will overhaul its power plant and machinery for reopening its plant.

WICHITA—City will receive bids soon for the construction of a repair shop. Former bids were rejected. E. Charles & Co. are architects.

Arizona

DOUGLAS—City proposes to erect a hangar, 100 x 120 feet, and has awarded contracts. Estimated cost, $13,000.

FLAGSTAFF—Flagstaff Light Co., G. T. Herrington manager, proposes to install generators of 500 kilovolt-amperes capacity at its plants here and at Winston, Ariz., and one 1000-kilovolt-ampere generator at its Holbrook, Ariz., plant.

Utah

PRICE—City plans to install a diesel unit, with 300 kilovolt-amperes capacity. Estimated cost, $30,000.

Pacific Coast

LANCASTER, CALIF. — Southern California Edison Co., 306 West Third street, Los Angeles, plans to build a

power substation here. Cost is estimated at $50,000.

MARE ISLAND, CALIF.—Bureau of yards and docks, navy department, Washington, will receive bids Nov. 26 for one 40-ton electric gantry crane and runway, to be installed here.

PITTSBURG, CALIF.—Pacific Gas & Electric Co., 245 Market street, San Francisco, proposes to build a power substation here at a cost of about $60,000.

SANTA ANA, CALIF.—Copperconda Co., Los Angeles, proposes to erect a metal refining plant here. Estimated cost, $100,000.

MILWAUKIE, OREG.—National Engineering & Equipment Co. has been organized with H. S. Phillipson as manager for the purpose of manufacturing a precision toolpost grinder and other machines.

PORTLAND, OREG.—Premier Gear & Machine Works, Seventeenth and Thurman streets, is constructing the first unit of a plant which will contain 10,000 square feet of floor space.

SEATTLE—Board of public works will receive bids about Jan. 1 for three pumping stations. R. H. Thompson is engineer. Cost is estimated at $200,000.

SEATTLE—King county commissioners will receive bids about Jan. 1 for a hangar unit, 100 x 200 feet, for Boeing field. Federal government will occupy half of the hangar. Cost is estimated at $80,000. T. Hunt is county engineer.

Dominion of Canada

VICTORIA, B. C.—West Kootenay Power & Light Co. has filed revised plans for a power plant to be built on the Pend Oreille river, designed to develop 175,000 horsepower.

WINNIPEG, MAN.—Leyland Motor Truck Ltd., Leyland, Eng., is reported to plan the construction of an assembly plant here for trucks and buses. Cost is estimated at $200,000.

ALEXANDRIA, ONT.—City council is considering the expenditure of $20,000 on new equipment for the municipal waterworks, to include motors and pumps. S. MacDonnell is clerk.

FALCONBRIDGE, ONT.—Falconbridge Nickel Mines Ltd. will start work in January on an addition to its converter and smelter building. Cost is estimated at $50,000.

HAMILTON, ONT.—Manufacturer's Natural Gas Co. Ltd. proposes to build a $1,000,000 compressor plant and gas holder.

LONDON, ONT.—Power plant will be erected by the Kellog Co. of Canada. Approximate cost, $150,000.

LONDON, ONT.—Power plant additions and installation of new boilers are planned by Supersilk Hosiery Ltd. D. M. Bright is engineer.

OTTAWA, ONT.—Ottawa Iron Works Ltd. has been incorporated with 20,000 no par shares by Thomas A. Beament to manufacture and deal in iron and steel and other metals.

TORONTO, ONT.—Sangamo Electric Co. of Canada Ltd., 183 George street, will build a 2-story plant addition. General contract has been let to James A. Wickett Ltd., 16 Saulter street. Chapman & Oxley, 372 Bay street, are architects. Cost is estimated at $20,000.

WELLAND, ONT.—Dominion Lock-Joint Pipe Co. Ltd., Hurling street, Toronto, Ont., is reported to plan a plant here for the manufacture of large pipe.

MONTREAL, QUE.—Consolidated Pipe Co. Ltd., Canarald street, will start work at once on a 1-story, 65 x 140-foot plant on Decarie boulevard.

MONTREAL, QUE.—George W. Reed & Co. Ltd., 779 St. Antoine street, has let general contract to Church, Ross Co. Ltd., 1440 St. Catherine street west, for a plant on Richelieu street. Estimated cost, $400,000.

MONTREAL, QUE.—Associated Equipment Co. of Canada Ltd. has been incorporated with 10,000 no par shares by Victor J. Nixon, 334 Old Orchard avenue, to manufacture and deal in motor vehicles, aircraft and machinery.

New Trade Publications

ROOFING SHEETS—A folder has been prepared by Inland Steel Co., Chicago, showing a new type of roofing sheets which has been provided with a triple barrier against water, to resist the severest rains.

INDUSTRIAL PLANTS—The Austin Co., Cleveland, architect, engineer and builder, has prepared a booklet for distribution among prospective builders, citing many questions to be considered before starting construction, with answers from the experience of the company.

NICKEL ALLOYS—The fall issue of its buyers' guide has been issued by the International Nickel Co., New York. It is a tabulation of sources of supply for nickel steels, and special ferro-nickel alloys but does not include nickel cast iron or the nickel-bearing nonferrous metals.

MANOMETERS—Meriam Co., Cleveland, has issued a booklet on manometer draft and pressure gages. A simple, nontechnical discussion covers the fundamental principles of operation of this type gage and is followed by instructions for operating. Data tables are given for pressure and flow measurement.

BENTONITE—Silica Products Co., Kansas City, Mo., describes in a current bulletin the properties of bentonite, a natural, hydrous, silicate of alumina which forms a highly viscous gel in the presence of water. Among various uses suggested, the product is indicated as a binder for silica sand for making foundry molds and cores or as a core wash.

ELECTRICAL EQUIPMENT—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued its general catalog for 1931-1932, covering its entire line. An instant index has been included as a feature facilitating immediate reference to any section of the book with a minimum of search. Various indexes assist in finding the object sought.

INDUSTRIAL ELECTRIC HEAT—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., devotes a current catalog of its electric heating devices to their application to industrial uses, a field which has been growing rapidly. Illustrations of heating devices are supplemented by charts showing heating curves and results of various degrees of heat.

TRAMRAIL—Buckets have been proven an efficient means for handling bulk materials and tramrail is suggested as the best means of handling the buckets, in a bulletin by the Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O. Illustrations show a variety of handling problems solved by the tramrail.

UNDERFEED STOKERS—A catalog covering its type E underfeed stoker has been issued by the Combustion Engineering Corp., New York. It is applicable to boilers from 150 to 600 horsepower and will use coking or noncoking coal or various types of refuse. Line drawings show suggested application of the stoker to various types of boilers. Test data are included.

WROUGHT IRON—A bulletin on characteristics and applications of wrought iron is being circulated by the Wrought Iron Research association, Pittsburgh. It gives pictorial and textual information on wrought iron, with microphotographic illustrations, showing structure of the metal, and charts and tables covering its physical properties.

CANADIAN BRANCHES—An article in the October issue of *Agricultural and Industrial Progress in Canada*, a publication of the Canadian Pacific railroad at Montreal, Que., contains a statement of manufacturing opportunities in Canada, written by E. C. Strong, vice president of the Sherman Corp. of Canada Ltd., Toronto. It points out advantages of American manufacturers establishing branch plants in Canada to take advantage of preferential tariffs enjoyed by Canada in its trade with other countries.